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PERFORMANCE-BASED COMPENSATION – A REALIST REVIEW

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ABSTRACT OF THE MASTER'S THESIS

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Abstract

This thesis is a systematic literature review of performance-based compensation literature of non-executive managers and employees utilizing the realist review method. The purpose of the thesis is to find and describe the variables affecting performance-based compensation. The variables are examined within a customized framework of 10 themes, which is based on Bonner and Sprinkle's 2002 framework on performance incentives. These 10 themes are the effectiveness of performance-based compensation, performance measurement, subjective performance measurement, fairness perceptions, cultural differences, employee retention and attraction, contract framing, goal setting, implementation, and feedback. These themes are then explored in the realist review to explain why, how and in what contexts the variables affect performance-based compensation. The literature sample extends on Bonner and Sprinkle's research by including empirical studies in addition to experimental studies. Also, the applicability of the realist review method to management accounting research is evaluated.

The thesis finds that performance-based compensation increases firm performance, especially if the employees perceive the system as fair. Performance measurement needs to be accurate, and targets need to be set to follow organizational goals. Subjective performance measurement, manager discretion, and peer-reviews can be used to complement objective performance measures. While penalties are found to extract more performance, bonuses are generally considered to be the better option. Performance-based compensation can be used to attract and retain talent and implementation process is important in the success of a performance-based compensation system. The effect of feedback is unclear. All the variables of performance-based compensation are subject to cultural differences, and it is difficult to define how generalizable the findings from one region, country or culture are to another culture. Finally, the realist review method is found to be a potentially effective research method for systematic literature reviews in management accounting.

Keywords
white-collar employee bonus, systematic literature review, performance pay

Additional information

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1 INTRODUCTION

1.1 Background

People are sometimes willing to put an incredible amount of effort to achieve their goals. Professional athletes devote their life for sports, musicians spend countless hours practicing their instruments and entrepreneurs live for their firm. Some people also have a strong internal motivation to succeed academically and professionally. While not everyone has the drive to become a professional athlete, professional musician or a high performer at work, everyone is capable of pushing themselves to incredible results if they are sufficiently motivated. This thesis is inspired by the curiosity to find out if any employees could be motivated to increase their work performance with performance-based compensation (PBC).

There is a strong interest in PBC systems in fast-growing Finnish software firms. Retaining good software developers is much less costly than recruiting and training new employees – and the pool of good developers who know the specific technologies is very limited. PBC can be utilized not only to motivate employees to perform better (Bonner & Sprinkle, 2002), but also to retain employees and attract new talented employees (Lazear, 2000). However, PBC is a complex tool with many variables and interdependencies. Implementing a PBC system without training and experience is a difficult undertaking for an entrepreneur and could even cause unintended harm instead of benefits (Baker, Gibbons, & Murphy, 1994).

1.2 Goals

This thesis is a systematic literature review of PBC of non-executive managers and employees. The thesis utilizes realist review method to look at what works, for what reason, how and in what context for 10 variables in performance-based compensation. These 10 variables are based on a customized framework of variables in performance-based compensation. The framework is based on the performance incentive framework of Bonner and Sprinkle (2002) and customized with the performance measurement frameworks of Franco-Santos, Lucianetti and Bourne (2012), and Ferreira and Otley (2009). This thesis' systematic literature review extends the systematic literature

review of Bonner and Sprinkle (2002) on performance-based compensation, as Bonner and Sprinkle only study experimental studies while this thesis also includes studies that use real-life empirical data. The final framework of 10 variables affecting PBC is presented in the following 10 hypotheses.

$H1_a$: Performance-based compensation is effective in increasing firm performance.

$H1_b$: Performance measurements need to measure and reward the employee on the dimensions that reflect the firm strategy.

$H1_c$: Subjective performance measures are usually an effective complement to objective performance measures.

$H1_d$: The employees' perception of fairness in their performance-based compensation increases firm performance.

$H1_e$: Performance-based compensation has significant cultural differences in North America, Europe, and Asia.

$H1_f$: Performance-based compensation schemes can be utilized to attract skilled employees.

$H1_g$: Penalties extract better performance than bonuses.

$H1_h$: The more difficult the targets the better the performance.

$H1_i$: It is beneficial to involve employees in the planning process of a new performance-based compensation system.

$H1_j$: Performance feedback improves performance.

Also, this thesis explores the feasibility of a novel systematic literature review method, a "realist review", in management accounting research. Realist review is traditionally used in health sector research to summarize and synthesize findings of empirical studies for policymakers to support evidence-based decision-making. The realist review method in this thesis aims to summarize the findings from incentive literature to form an understanding of some of the complexities affecting PBC. The thesis tests if realist review can provide useful information for managerial decision-making in management accounting.

H2: Realist review is an effective systematic literature review method for management accounting research.

The thesis contributes to the pragmatic science base of management accounting by systematically assessing PBC literature and explaining the results in a form that supports the designing of a PBC system in practice. Drawing a general picture of current research findings in the form of a realist review will help entrepreneurs and executive managers to design and implement PBC systems. There is a lack of this sort of pragmatic science in management accounting, as the findings in research are rarely put in a form that is applicable in practice (Jansen, 2018).

1.3 Research design

The study is a systematic literature review. The systematic literature review aims to locate, appraise the quality, and synthesize the findings from relevant research. The key features of a systematic literature review are a transparent and clear pre-specified search strategy with inclusion and exclusion criteria, and a specific method of processing the included studies. (Torgerson, 2003, p. 2.)

Systematic literature reviews have multiple possible methods to process the studies. This thesis uses the realist review method. Realist review is a qualitative review method and belongs in the "test review"-category, which also includes meta-analysis, a more common review method. Realist review is a method developed for synthetizing research results for policymaking by summarizing information about why something

is happening, in which cases does it happen, and what are the variables that affect this phenomenon. (Xiao & Watson, 2019.)

In this thesis, the literature search is limited to top-ranked accounting journals and various search terms are used to find PBC literature as comprehensively as possible from the selected journals. The studies are then filtered based on titles and abstracts, excluding unrelated subjects. Finally, studies are rejected or accepted based on the article content or availability of the articles, resulting in a final sample of 82 articles.

2 MANAGEMENT ACCOUNTING AND PERFORMANCE-BASED COMPENSATION RESEARCH

In this chapter, management accounting research is presented with the theoretical background on management control, performance management systems and performance-based compensation. Then, the theoretical background for dimensions that are used in this study are presented: performance measurement, subjective performance measures, fairness perceptions, personal and cultural differences, employee attraction and retention, contract framing and risk, goals and targets, implementation, and feedback. Finally, agency theory is presented.

2.1 Management accounting research

2.1.1 Management accounting theory

Management accounting is fundamentally an applied science, that attempts to provide solutions for practical problems in organizations (Jansen, 2018). Common management accounting tools and techniques to solve practical problems, like activity-based costing and balanced scorecard, can be called *normative theories* (Jansen, 2018). The problem is that these normative theories are rarely thoroughly empirically tested, and consequently are not considered actual academic theories (Malmi, Teemu & Granlund, 2009). Malmi and Granlund (2009) point out that there are, in fact, no management accounting theories that have academic theory status. Management accounting studies merely borrow theories from other disciplines like economics, social sciences, and organization science. One of the most used theory in management accounting is agency theory, which is presented in detail later in this chapter.

The management accounting research can be roughly categorized into two approaches: positivist research and interpretative research (Jansen, 2018). Positivism is based on a single reality, where anything that can be perceived is real and exists independently of human thought and perception (Bisman, 2010; Jansen, 2018). Interpretative research, in turn, assumes that subjective experiences construct the social reality, and a single, objective reality does not exist (Bisman, 2010; Jansen, 2018). While interpretative research is criticized for being invalid and untrustworthy (Lukka & Modell, 2010),

positivist research faces critique for being too general and self-evident to be useful in practical applications (Jansen, 2018).

Systematic literature reviews have historically been positivist (Torgerson, 2003, p. 7), but as systematic literature review methods have evolved it has become more acceptable to also utilize an interpretative approach to systematic reviews (Xiao & Watson, 2019). This thesis utilizes a realist review method, which does not directly classify under either paradigm. However, realist review has more features from interpretative research than positivist research since its function is to address practical problems and the method allows interpretation. Realist review is an especially useful method in synthetising interpretative intervention studies and case studies (Pawson, Greenhalgh, Harvey, & Walshe, 2004), which are common methods of research in management accounting.

2.1.2 Management control

Kaplan (1984) explains that management accounting has traditionally served two main purposes. First, to acquire and report information for internal planning via *cost accounting,* and second, to assist in coordinating, planning and control to improve organizational performance with *management control*. Cost accounting is the discipline that measures, analyses, and reports costs and profitability in different parts of the business and is not in the scope of this thesis. Management control aims to support the firm to implement a strategy and achieve organizational goals by managing and controlling the organizational structure, culture, and human capital (Strauss & Zecher, 2013). Management control methods try to achieve *goal congruence,* where management and employees' goals are aligned. In other words, management control attempts to guide the employee to do the things that the organization wants them to do and tries to prevent them from doing things that the organization does not want them to do (Malmi & Brown, 2008). Management control is an umbrella concept that includes multiple overlapping disciplines, like performance measurement, performance evaluation, strategic planning, budgeting - and of course PBC (Strauss & Zecher, 2013).

2.2 Performance management frameworks

Performance management systems, which includes the PBC systems, serve the organization's need for management control. There are several frameworks created to study performance management systems, performance measurement and incentives from different perspectives. In this study, I use Bonner and Sprinkle's (2002) framework of incentive systems with four main themes to form the basis of the thesis' framework. The four topics are then extended with the frameworks of Ferreira and Otley (2009) and Franco-Santos et al. (2012). Bonner and Sprinkle (2002) summarize that the effects of performance-based compensation are not universally valid, and Franco-Santos et al. (2012) mention that also the effects of performance measurement suffer from the lack of generalizability. This thesis attempts to explain the mechanisms and contexts where certain elements of performance-based compensation work within the framework of the variables presented in Table 1.

Ferreira and Otley's (2009) framework of management control systems and performance management systems research includes 12 questions that are matched to Bonner and Sprinkle's (2002) similar topics in Table 1. Franco-Santos et al. (2012) framework for contemporary performance measurement systems research has 21 dimensions that are also matched with similar topics of the other two frameworks. Finally, the last column of Table 1 presents this thesis' framework based on Bonner and Sprinkle (2002) and complemented with Ferreira and Otley (2009) and Franco-Santos et al. (2012).

Table 1: Frameworks for research in performance management and management control

Bonner and Sprinkle (2002)	Ferreira and Otley (2009) Performance Management Systems framework	Franco-Santos et al. (2012) Strategic Performance Measurement System – Consequence Associations	This Thesis
Person variables: - skill - intrinsic motivation - cultural background		Leadership and culture Citizenship behaviors Motivation	5. Personal and cultural differences
Task variables: - complexity - effort-sensitivity - presentation/framing - task attractiveness			7. Contract framing and risk
	6. Target setting		8. Goals and targets

Environmental variables: - assigned goals - feedback - training - accountability - decision rights - time pressure	9. Information flows, feedback and feed-forward systems	Communication	10. Feedback, recognition and promotion incentives
	8. Financial or non-financial rewards		1. The effectiveness of performance-based compensation
Incentive scheme variables: - rewarded dimension of performance - level of pay - timing - scheme type	2. Key factors that are central to organization's future success		
	5. Key performance measures deriving from firm objectives	Organization and business unit performance	2. Performance measurement 3. Subjective measures, peer-reviews and manager discretion
	7. Evaluation of performance	Perceived performance	
		Team performance	
		Managerial performance	
		Inter-firm performance	
	12. Are the links between performance management systems and the way they are used strong and coherent	Perceptions of subjectivity, justice and trust	4. Fairness perceptions
	4. Strategies and plans the organization has adopted	Satisfaction	6. Employee attraction and retention
		Strategic focus	
		Strategy processes: alignment, development, implementation and review	9. Implementation
	11. Performance management system development and changes proactively or reactively	Cooperation, coordination, participation	
	1. Vision and mission of the organization		
	3. Organization structure	Management practices	
	10. How information is used	Decision making, learning, self-monitoring	
		Judgment biases	
		Conflicts and tensions	
		Role understanding	
		Strategic capabilities	
		Corporate control	

Table 1 visualizes that this thesis' framework adds the perspectives of fairness perception, employee attraction and retention, and implementation to the framework of Bonner and Sprinkle. Additionally, the framework breaks down some of the Bonner

and Sprinkle's classifications into multiple parts to avoid too broad generalizations about PBC in the realist review.

2.3 Performance-based compensation

Performance-based compensation refers to extra compensation paid on top of the fixed salary for performing well at work. This could be meeting performance targets, getting favorable reviews from managers and peers, or getting sales commission. Most countries have a minimum fixed salary, defined by law or unions. Nevertheless, firms typically pay above minimum salary and reward the employee for good performance with PBC, especially if the firm requires highly skilled employees. PBC is a system where the employee receives a reward at the end of a pre-defined period based on their work performance. In other words, the compensation is dependent on employee performance or output, unlike the fixed salary which is paid regardless of performance.

PBC is widely used to increase employee commitment towards the firm's goals. It is generally agreed that PBC can increase firm performance (Bonner & Sprinkle, 2002). However, the evidence is mixed regarding the PBC effects on individual performance, and sometimes the effect of PBC can even be negative to firm performance (Baker et al., 1994; Bonner & Sprinkle, 2002). The knowledge of which methods are beneficial and which ones are harmful in PBC is especially important because of the risk of causing significant damage to the firm by implementing a poorly designed PBC system (Baker et al., 1994). Some argue that the employee's intrinsic motivation and performance-based compensation are incompatible, presuming that incentives and control reduce the performance of a highly motivated employee (Cerasoli, Nicklin, & Ford, 2014). Cerasoli et al. (2014) find that not only does PBC work in contexts where the employee is motivated, but PBC can sometimes significantly boost performance when the employee is highly motivated.

2.4 Performance measurement

Traditionally, performance measurement has been based on control. Firms have set actions that they wish their employees to complete and then measure and monitor if the employees have taken the actions (Kaplan & Norton, 1992). The performance-

based compensation rewards are based on performance measurements and performance targets. In other words, an employee has a certain work output that is measured and compared with pre-defined output target levels that then reward the employee for achieving or exceeding the desired output levels with performance-based compensation. In some systems, failing to meet the desired output might also result in a penalty for the employee.

The simplest performance based-compensation system is the piecework, or a piece-rate system. Piece-rates refer to performance-based pay that is rewarded based on how many units the employee has produced, for example in a manufacturing facility. However, basing the measurement on units produced is only possible if the employee output is cheap and objective to measure. Piece-rates are much less effective when the work is complex and the output is difficult to measure, for example in managerial and professional roles. (Lazear, 2000.)

To bring more elements to performance measurement, Kaplan and Norton developed the balanced scorecard, which is nowadays the most well-known method for performance measurement that combines financial and operational performance measures. The balanced scorecard attempts to widen the perspective of performance measurement to not only focus on controlling the employee's performance on one dimension, but to allow the employee to find the best ways to meet the performance targets by measuring multiple dimensions and rewarding for overall good performance. These dimensions are financial perspective, customer perspective, internal business perspective, and innovation and learning perspective. (Kaplan & Norton, 1992).

These balanced scorecard dimensions consist of objective measures, albeit much more complex than the simple unit output-based piece-rate system. Financial perspective consists of external and internal accounting figures and performance reports. Customer perspective measures operational variables like lead time, number of defects, number of complaints, and delivery forecast accuracy. Internal business perspective monitors productivity by measuring cycle time, quality, productivity, and cost. Innovation and learning perspective could include the rate of introducing new products, upgrades to

old products, or the rate of increasing the performance on other metrics. (Kaplan & Norton, 1992.)

2.5 Subjective performance measures and discretion

Performance measurement in complex organizations usually includes more than only one dimension of measurement. Objective performance measures are sometimes complemented with subjective performance measures based on manager review, peer-review, nonfinancial measures or HR measures. Rewarding for performance only on objective metrics risks that the employees only focus on those tasks ignoring value-enhancing tasks that cannot be objectively measured like training and helping others, customer satisfaction and marketing (Baker et al., 1994). Subjective performance measurements could include flexibility in the weighting of objective performance measures, making discretionary target adjustments *ex-post*, and subjective performance evaluation by a manager or the employee's peers (Voußem, Kramer, & Schäffer, 2016).

The ability for supervisors to use discretion in performance evaluations can reward employees on their effort on dimensions of the job that do not directly affect the output or affect output that is difficult or impossible to objectively measure (Voußem et al., 2016). These dimensions could be for example leadership quality, personal integrity, professional attitude, supporting colleagues or teamwork. Additionally, the subjective performance measurements could discourage employees to attempt gaming objective measures, for example attempting to increase profits short-term at the cost of long-term performance (Baker et al., 1994). However, the risk in subjective performance measures is the human factor. Evaluation based on a single supervisor's review is subject to multiple biases like halo effect, favorability bias and availability heuristic (Baker et al., 1994; Voußem et al., 2016). Some of the biases and risk of gaming can be alleviated with delegating the performance review responsibility to multiple managers or utilizing peer-reviews (Baker et al., 1994).

2.6 Fairness perceptions

The perception of justice in the organization, which in this thesis is called the perception of fairness, is a substantial basis of performance-based compensation research. If an employee feels like they are treated fairly and enjoy their job, they tend to outperform those who don't (Cerasoli et al., 2014; Moorman, 1991). The perceived fairness is distributed into three separate categories: distributive, procedural, and interactional fairness. In this thesis, these are not distinguished from each other but treated as the perception of fairness altogether. This is an intentional simplification for the sake of keeping the information concise and readable.

The two main categories, distributive and procedural fairness are the most common and also explain the dimensions of perception of fairness. Distributive fairness is simply how fair the distribution of outcome is perceived. In this case, how fair does the employee perceives the received bonus. Procedural fairness is how fair the organizational practices and processes are perceived. In other words, does the employee think that the way bonus payments are determined is fair. (Cohen-Charash & Spector, 2001.)

Most importantly the perception of fairness predicts employee behavior. Perceived unfairness causes negative emotions in the employee and hinders organizational performance. Perceived fairness, in turn, predicts organizational commitment, better organizational citizenship behavior, trust, and work satisfaction, all of which ultimately result in better organizational performance. (Cohen-Charash & Spector, 2001.)

2.7 Personal and cultural differences

Culture affects the perception of performance-based compensation, performance measures and contract framing. Even the determinants of what good performance is made of are dependent on culture. In individualistic cultures the emphasis is on work outcome and results, while in collectivist cultures the in-group loyalty and harmony are valued over individual performance (Aycan, 2005). Culture significantly affects the effectiveness of PBC and whether bonus contracts outperform penalty contracts

(Lee, Ribbink, & Eckerd, 2018). Also, Aycan (2005) mentions that the practice to use peer- or self-evaluation in performance measurement only works in cultures with low power distance, as in high power distance cultures such utilization of subordinates' feedback is seen to undermine supervisor's authority. In other words, there are multiple mechanisms that are triggered by cultural differences.

2.8 Employee attraction and retention

To attract and retain employees, workplace perks like espresso machines and ping-pong tables in software start-ups are only a stereotype, and employees report a healthy work environment and fair compensation as the most important motivational factors (Shellenbarger, 2018). Lazear (2000) estimates that half of the productivity increase caused by PBC is caused by the ability to hire the most productive employees and reduction in quits among high-performing employees. While Lazear's study utilized piece-rates in a manufacturing setting, it is likely that an attractive PBC contract can support firms' recruiting efforts also in fields that require highly educated employees.

2.9 Contract framing and risk

The question whether a bonus contract or a penalty contract is more effective is central to the PBC. Hannan, Hoffman and Moser (2005) find that while bonuses are considered a fairer contract frame, penalties result in better performance. Hannan et al. (2005) explain that the better performance under penalty contract frame is caused by the strong tendency for loss aversion compared to the motivational effect of bonus contract frame. Nonetheless, if given the choice, employees tend to select bonus contracts over penalty contracts due to the same loss aversion effect (Hannan et al., 2005). Hannan et al. (2005) find that the cost of reduced perception of fairness is significant, yet not substantial enough to warrant the choice of penalty contract when compared with equal setting on a bonus contract. Lee et al. (2018) note that in some cultures bonus and penalty contracts extract the same amount of effort but in other cultures bonus contracts are significantly more effective.

2.10 Goals and targets

Generally, people pursue personal goals, and their actions are driven by individual desires and motivations. The aim of performance management, management control and performance-based incentive plans is to try to motivate the employee towards personal goals that are aligned with the firm's goals (Cugueró-Escofet & Rosanas, 2013). Central theories to goal setting and its relationship with performance-based compensation are the goal congruence theory and the goal-setting theory.

2.10.1 Goal congruence

The firm wishes to ensure that the organizational goals are achieved. An effective way to ensure that the organizational goals are achieved is to align these organizational goals with the employee's personal agenda at work. This is called *goal congruence*. In management accounting, management control systems' main purpose is to achieve goal congruence (Cugueró-Escofet & Rosanas, 2013). At the core of achieving goal congruence by management controls lies the PBC. The effectiveness was proven already in manufacturing firms of the early 1900s utilizing piece-rate salaries in the wake of Frederick Taylor's scientific management theory that was released in 1909 (Taylor, 2004). Since then, work has become much more complex, and achieving goal congruence is usually not as simple as paying extra salary based on the units produced.

2.10.2 Goal-setting theory

Setting the right difficulty for the targets is nearly as important as setting the right targets that reflect the firm strategy and drive the firm performance. If the targets are too easy, the employees do not need to increase their performance to meet them. If the targets are too difficult and only a few employees can achieve them, the motivational effect of PBC could even be negative. Goal-setting theory summarizes that more difficult targets drive performance (Locke & Latham, 2006).

Locke and Latham explain that difficult targets lead to greater efforts and direct attention to the targets instead of nonrelevant actions that do not further the achievement of the target. The requirements for higher performance via difficult

targets require that the employee has the commitment and ability to achieve the target and that they do not have conflicting goals. Especially the achievement of targets is deemed important, as employees feel success when they can achieve difficult targets that are important and meaningful. (Locke & Latham, 2006.)

2.11 Implementation

There are positives in involving the employees in the planning process of the performance-based incentive system (Kauhanen & Piekkola, 2006; Moilanen & Ikäheimo, 2019). The more complex the work is, the more beneficial it is to include the employees during the planning (Kauhanen & Piekkola, 2006). By including employees in the planning process, it also enhances the perception of fairness of the performance-based incentive system, which is especially important if the PBC is utilizing team-based incentives and performance measures (Moilanen & Ikäheimo, 2019).

Regarding the planning process, there is evidence that managers generally do not consider employees' perception of the incentive system when designing the system, causing the feeling of uncontrollability, which in turn results in explaining missed targets by external factors and potentially hampering the effectiveness of the incentive system (Moilanen & Ikäheimo, 2019). The implementation process is also important especially in terms of how the incentive system is perceived. Even if the system itself is deemed fair but it is implemented poorly or insensitively the positive effect is reduced or removed by creating a perception of unfairness. (Moilanen & Ikäheimo, 2019)

Completing the implementation of the PBC system is not the end, but the development of the system continues through its life cycle. Especially when considering the fairness perception-point of view, a rigid system very easily creates situations that are perceived as unfair, and the system needs to be developed according to the changing needs of the organization, team and the business to keep the system goal congruent and perceived as fair (Cugueró-Escofet & Rosanas, 2013).

2.12 Feedback, recognition and promotion incentives

Feedback is information that is provided to the employee regarding their performance. The effect of the feedback varies depending on the content, quality and frequency of the feedback, task characteristics and situational factors. Feedback, especially negative feedback, is considered difficult to give or receive which is exacerbated with cultural factors like high power distance and collectivistic culture (Aycan, 2005). In such cultural contexts, some studies conclude that feedback is unwelcome (Aycan, 2005). Kluger and DeNisi (1996) find that feedback generally increases performance and can potentially be significantly large and positive driver of performance. Nonetheless, in some cases the feedback does not affect performance and in significant number of cases the feedback reduces performance (Aycan, 2005; Kluger & DeNisi, 1996). Kluger and DeNisi (1996) conclude that one of the major benefits of giving feedback is that feedback changes the direction of attention and is especially effective on lower hierarchy levels. They do not find conclusive evidence if giving and receiving positive or negative feedback has any difference on the effect on performance.

2.13 Agency theory

Agency theory is one of the most used theories in management accounting and a fundamental basis for performance-based compensation research. Agent-principal relationships prevail in situations where PBC is relevant. That is why, even though agency theory is not a management accounting theory per se, the theory is widely used in PBC literature. Agency theory was established in the early 1970s, with Jensen and Meckling (1976) publishing the leading article. Agency theory is the most used theory in this thesis' literature sample, being explicitly mentioned in 17 out of the 82 articles. Agency theory also introduces multiple other theories that build the foundation for most of the PBC literature, like the theories and norms of self-interest, moral hazard, risk aversion, bounded rationality, and information asymmetry.

Jensen and Meckling (1976) define the agent-principal relationship as a service, which is desired by the principal but performed by the agent. The agency problem is that the agent, driven by their own utility-maximizing motive, in other words, self-interest, might not always act in the best interest of the principal because usually the principal

and the agent have different motives. Eisenhardt (1989) summarizes the agency problem into two parts. To begin with, the goals of the principal and the agent are different, and the principal cannot monitor the agent to do as desired. Then, the principal and agent have a different attitude toward risk, and consequently prefer different courses of action.

A key feature in agency theory is the information, and how information can alleviate the agency problem. The stronger the ability to monitor the employees' actions and acquire information about them, the less severe the agency problem becomes. Additionally, using incentives like PBC to line up the goals of the principal and the agent, to achieve goal congruence, is another way to the battle agency problem if acquiring information is impossible or too costly. (Eisenhardt, 1989.)

In addition to the assumption of information asymmetry between the agent and the principal, agency theory relies on few other assumptions and base theories. These are assumptions that a human is driven by *self-interest*, has *bounded rationality,* and is *risk averse.* However, risk aversion has a counter-effect of *moral hazard,* and information asymmetry causes *adverse selection*. All these assumptions and base theories, which are further explained in the next sections, result in goal conflict and information asymmetry between the principal and agent and are the root of the agency problem. (Eisenhardt, 1989.)

2.13.1 Self-interested and individual agent

The agent is assumed to attempt the maximization of their own utility. The utility can be defined in different methods; a well-known one is *Maslow's hierarchy of needs*. Fundamentally, the hierarchy of needs is built on tiers that represent the urgency of the need. The first level is physiological needs, which refers to a need to, for example, eat, drink and sleep. The second level is safety, which refers to practically living in freedom from fear and being protected physically. The third level is the need for love and belongingness, after which the fourth level is esteem needs like dignity and achievement. The last level is self-actualization which refers to self-fulfillment and personal growth. (McLeod, 2007.)

The important takeaway from Maslow's hierarchy of needs is that a self-interested agent is not necessarily selfish. While Taylor's scientific management assumed that agents are only driven by money, the truth is much more complex, and the agents maximize their utility in varying ways.

The personal variance between individuals is what makes the agent-principal relationship difficult. If everyone were robots, the goal congruence would be guaranteed and there would be no information asymmetry between agents and the principals. Since information asymmetry always exists, the decisions and goals of the agent are not naturally in line with the principal. Even if all the information was available, the agent is still unlikely to make optimal decisions due to *moral hazard.*

2.13.2 Moral hazard and risk aversion

Moral hazard refers to a situation, where the agent and principal bear a different amount of responsibility for risk. The agent might make a decision with negative consequences, that do not land on the agent themselves. Moral hazard can be alleviated by information systems, since acquiring information about an agent's action and state of nature is helpful even if imperfect (Holmström, 1979). Unfortunately, even if there was no information asymmetry and no moral hazard, the agent might still make the harmful decision due to *bounded rationality* or the difference in *risk aversion* of the agent and the principal.

In agency theory, it is assumed that the agent is risk averse (Eisenhardt, 1989). For example, in a case of an important investment decision, the agent might not choose the best action because the agent deems it too risky. Risk aversion also significantly differs between individuals. An organization can combat this with incentives; the employees can be motivated to be more risk-averse (Brink & Rankin, 2013; Hirsch, Reichert, & Sohn, 2017; Liang, Rajan, & Ray, 2008) or to take more risks (Hannan, Krishnan, & Newman, 2008; Hirsch et al., 2017; Oblak, Ličen, & Slapničar, 2018) depending on the methods utilized.

2.13.3 Bounded rationality and information asymmetry

Assuming all the information and all the choices with every possible outcome are available for the agent for a cost, the question is “how much can be invested into making the decision?”. Human information processing capacity is limited, and nearly always there are too many complexities and too great constraints for the agent to consider all the possible scenarios to choose the optimal one. This leads to the theory of bounded rationality, where decisions are always clouded in a certain amount of uncertainty and are up to the individual interpretation of situations even if all the information was possible to be acquired. (Simon, 1972.)

In practice, all the information is usually not available for decision-making. Sometimes the situation completely changes after the first decision has been made, making it impossible to predict what are all the possible outcomes. Additionally, information and communication between the principal and agent may be imperfect, where the agent misunderstands the goals of the principal when making the investment decision. At worst, there might be a situation where the agent or the principal knowingly withholds information from the other party to benefit themselves. This is called *adverse selection*. (Eisenhardt, 1989.)

3 SYSTEMATIC LITERATURE REVIEW

3.1 Systematic Review as a method

A literature review is one of the essential features of academic research. New knowledge needs to be built on existing knowledge – and the main goal of a literature review is to summarize and categorize existing knowledge (Fisch & Block, 2018). With a systematic review, the existing literature can be structured in different ways depending on the literature review method, enhancing the overall understanding of the existing knowledge. (Xiao & Watson, 2019). A systematic review aims to explore the body of existing literature in a precisely structured and systematic way, defining the frontier of current research (Xiao & Watson, 2019). While the basis of the systematic literature review lies in the structured and rigorously documented research approach, the synthetizing of results also requires author interpretation, incorporating a level of subjectivity in the method (Fisch & Block, 2018). Nonetheless, the differentiating factor of the systematic literature review from other literature review methods like narrative literature review is the systematic nature of the search strategy and inclusion criteria. The reproducibility and well-defined structure of the literature search is important in a systematic literature review, differentiating it from the other literature review methods (Torgerson, 2003, p. 5).

The systematic literature review begins with setting the scope of the review by defining the inclusion criteria of the study. This builds the foundation for the literature search, which needs to be conducted systematically and documented carefully, including search terms and search tools. Then the found literature is screened and usually filtered based on the articles' abstract, choosing the relevant studies that fit the pre-defined inclusion criteria. The quality and eligibility are also assessed at this stage, filtering the articles based on, for example, publication or content quality after skimming the article. After these steps, the data can be extracted, interpreted, and presented. (Xiao & Watson, 2019.)

3.2 Systematic Literature Review in general

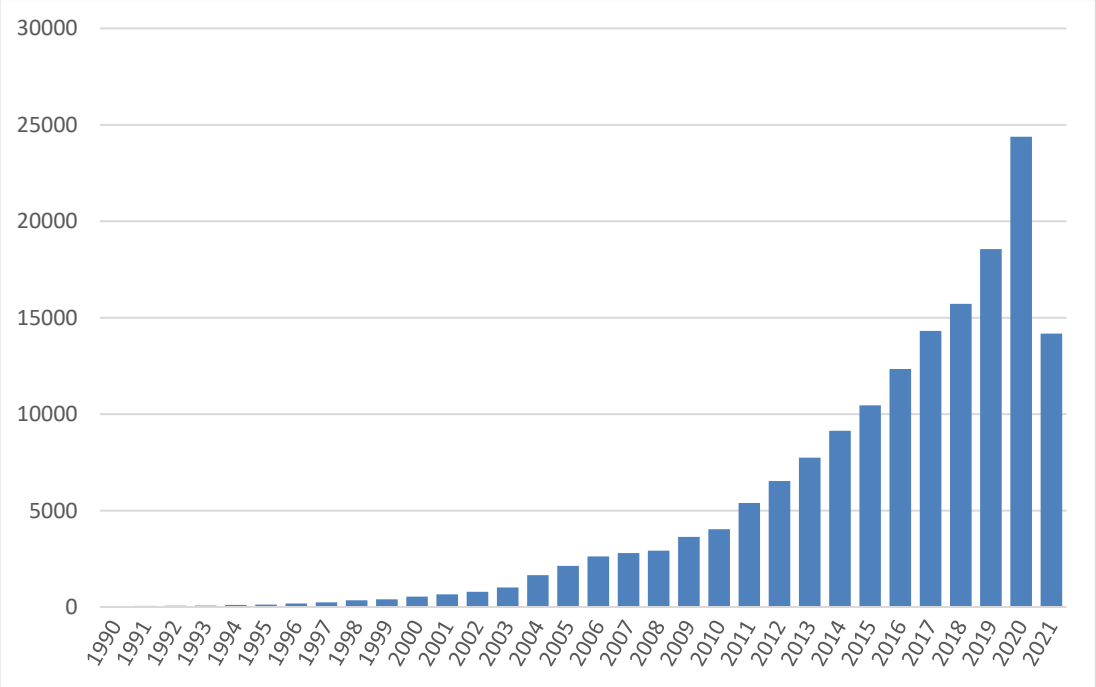
Healthcare, social science, and educational science were the early adopters of systematic review (Torgerson, 2003, p. 6). The first notable paper explicitly containing systematic review goes back to the 1904 study of typhoid vaccine, even though some varieties of meta-synthesis have been utilized earlier in, for example, astronomy and psychology (Chalmers, Hedges, & Cooper, 2002). In the mid-1900s meta-analyses were already used in social sciences, education, and agriculture (Chalmers et al., 2002; Torgerson, 2003, p. 9). For a long time, systematic reviews were not regarded as novel pieces of research but considered as parasitic attempts to recycle already researched knowledge (Chalmers et al., 2002).

In the early 1990s, the health care sector identified a need for a comprehensive knowledge base, as a single study rarely manages to touch all possible dimensions since most studies are constrained by time, set in a certain context, and have a specifically limited sample which all introduce limitations to overall applicability of the results (Torgerson, 2003, p. 4). In healthcare, this stronger emergence of systematic reviews was led by Cochrane Collaboration not only conducting systematic reviews in health care, but also creating guidelines in how to write systematic reviews, beginning their work as early as in the 1970s (Chalmers et al., 2002; Pawson et al., 2004). This has led to the increasing use of systematic reviews to find the totality of research results to be able to utilize the already existing knowledge more comprehensively in decision-making (Torgerson, 2003, p. 5).

Logically, healthcare was, and still is, the forerunner in the rise of systematic review. Systematically synthetizing knowledge from studies has the potential to discover both universal effects and universal ineffectiveness. In the 1990s, the increased number of systematic reviews increased the available knowledge for decision-makers in healthcare, helping make better-informed decisions regarding the treatment procedures of patients and consequently boosting the perception of systematic reviews. As a result, in the 1990s multiple official instances, like the health officials in Denmark, Britain, and the Netherlands, started to require conducting a systematic review as a precondition before granting funding for new healthcare research. (Chalmers et al., 2002.)

Nowadays, the practice of requiring a systematic review before acquiring funding for a research project is not at all uncommon in all disciplines. In addition, systematic reviews are not only standalone pieces but are commonly used to complement and form a background for any research (Xiao & Watson, 2019). Chalmers et al. (2002) note that science by nature is cumulative, but that the responsibility to cumulate the knowledge lies in the scientists. Without systematically gathering the knowledge, the findings of research remain scattered.

Figure 1: Scopus results with search terms "systematic literature review", "systematic review" or "meta-analysis" by publishing year (1990-2021) until June 2021



In Figure 1, a Scopus search with the terms "systematic literature review" or "systematic review" or "meta-analysis" is visualized. Before the year 1990, less than 50 systematic literature reviews have been published annually while nowadays the quantity of systematic literature reviews published annually is a five-figure number. Even when removing the term "meta-analysis" from the search, the numbers do not change significantly. The result indicates a significant improvement in the perception of systematic literature review and supports Chalmers et al. (2002) statement that systematic literature reviews are nowadays considered an important contribution to science.

Table 2: Systematic literature review articles containing certain subjects from 1900-2009 to 2010-2021 until June 2021

Subject area	1900-2009	% of total	2010-2021	% of total	Change
Computer Science	263	1.3 %	8204	5.8 %	4.5 %
Engineering	390	1.9 %	6791	4.8 %	2.9 %
Social Sciences	1081	5.1 %	11330	8.0 %	2.8 %
Business, Management and Accounting	299	1.4 %	5911	4.2 %	2.7 %
Environmental Science	276	1.3 %	5716	4.0 %	2.7 %
Biochemistry, Genetics and Molecular Biology	1317	6.3 %	12377	8.7 %	2.5 %
Agricultural and Biological Sciences	318	1.5 %	4927	3.5 %	2.0 %
Neuroscience	712	3.4 %	6133	4.3 %	0.9 %
Immunology and Microbiology	381	1.8 %	3582	2.5 %	0.7 %
Psychology	954	4.5 %	7060	5.0 %	0.4 %
Pharmacology, Toxicology and Pharmaceutics	758	3.6 %	5551	3.9 %	0.3 %
Dentistry	503	2.4 %	3368	2.4 %	0.0 %
Nursing	1482	7.1 %	9274	6.5 %	-0.5 %
Health Professions	1017	4.8 %	5809	4.1 %	-0.7 %
Medicine	17192	81.9 %	99915	70.5 %	-11.4 %
Total articles	20991		141755		

In addition, Table 1 demonstrates the change in the subject area focus on systematic literature reviews. The rise in the number of systematic literature reviews can be partially attributed to more disciplines starting to use the method. Most of the systematic literature reviews conducted nowadays are still from the subjects of medicine, biochemistry, and social sciences.

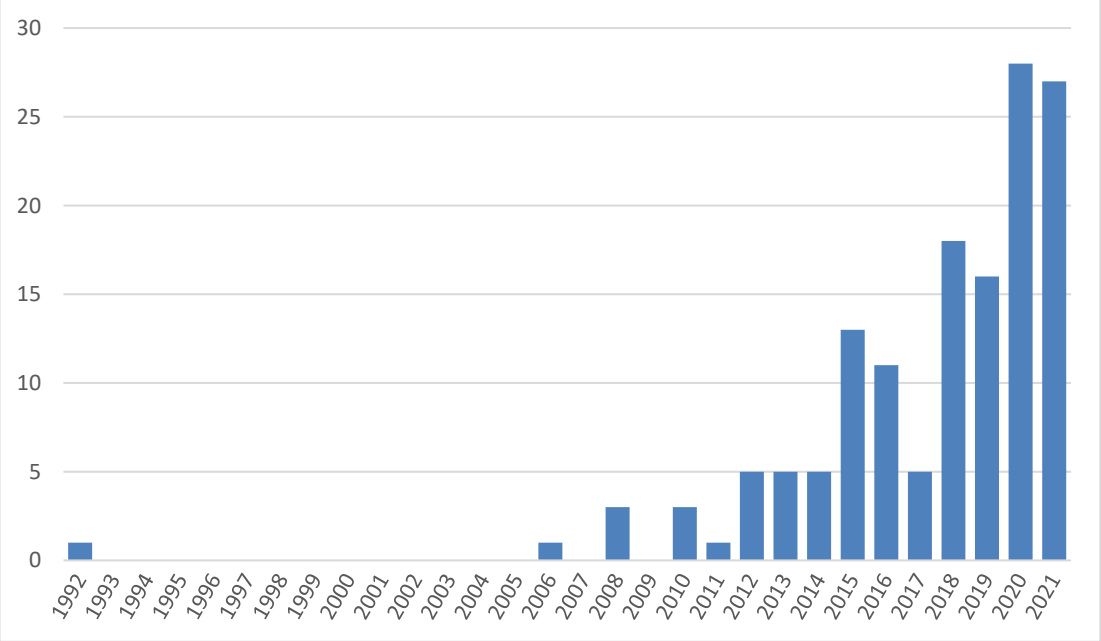
3.3 Systematic Literature Review in accounting

In accounting, the usage of systematic reviews has significantly increased very recently. By searching in Scopus “Business, Management and Accounting” and “Economics, Econometrics, and Finance” categories for keywords “systematic literature review” and “accounting”, most results out of the total 142 are from the last five years as is visualized in Figure 2. Even when extending the search terms with “systematic review” and “meta-analysis” only one more article is found, resulting in

no significant difference. The articles in this search are analyzed based on the title and keywords, and abstract.

Based on the search results presented in Figure 2, the use of systematic literature reviews has only very recently emerged in the field of accounting as seems to be the case for many other disciplines as well. Remarkably, the most common keywords are "management accounting" (27/142) and "sustainable development" (14/142), followed by "accounting" (11/142) and "management control" (11/142). This indicates that conducting a systematic literature review is much more common in management accounting research than in financial accounting research. From this search, however, none of the systematic literature reviews study PBC.

Figure 2: Scopus results with search terms "systematic literature review", "systematic review" or "meta-analysis" and "accounting" by publishing year (1992-2021) until June 2021



To find out if other disciplines than accounting have conducted systematic literature reviews about PBC, the search terms are changed to include "systematic literature review" with "compensation" or "pay" instead of the search term "accounting". A total of six out of the found 104 articles were related to PBC. Only two articles were about CEO or executive compensation while four were about non-executive compensation, suggesting that non-executive PBC could, in fact, be more prominent research subject

than CEO and executive compensation. None of the systematic literature reviews related to PBC or executive compensation were published in an accounting journal. The six articles were published in health economics journals, human resources journals, and management journals, indicating that there is a research opportunity in systematically reviewing literature about PBC from a management accounting perspective.

Overall, there are not many systematic literature reviews conducted in accounting in general, and especially PBC has very few published systematic literature reviews. It is difficult to speculate why the systematic literature reviews have risen to prominence only during the last 10 years in accounting, even though systematic literature reviews, in general, have started to gain traction already in the 1990s. One of the explanations could be that systematic literature reviews might not have been an acceptable form of research in accounting until very recently. Also, since literature reviews have not been regarded as proper research until recently, less people have likely attempted to create literature review articles. Another possibility is that the source literature in specific topics in accounting has been so scarce, that a systematic literature review would have not been reasonable to conduct. Additionally, there is a possibility that the Scopus search did not find all published systematic literature reviews in accounting.

3.4 Realist Review

3.4.1 Realism

Realism is one of the perspectives in modern philosophy and social science. Pawson and Tilley (1997, p. 10) define the basic realist formula as:

$$mechanism + context = outcome$$

Ontologically, scientific realism has a single reality, which considers structures and mechanisms as a reality that endures and operates independently of human intervention (Kazi & Spurling, 2000). Realism does not consider the reality fully observable, but a construct of social processes and human actions, rooted in social rules and institutions (Pawson & Tilley, 1997). In this sense, realism lies in the middle

ground between pragmatism and positivism. Realist evaluation attempts to make sense of the reality as a whole, asking questions like why a program works, for whom, and in what circumstances (Kazi & Spurling, 2000). In other words, realist evaluation tries to not only figure out the cause and the outcome, but also the context where such causality is happening.

In this middle ground between pragmatism and positivism, realism answers to the critique of both. Positivist research has often been criticized for artificially created experiments that do not reflect practice. Pragmatism, in turn, has been criticized because the reality is reduced to observations – which is also a too narrow view for practical purposes. One cannot possibly observe all perspectives of reality, but neither can reality be constrained to artificial experimental conditions. Realism attempts to partially solve these scientific problems by considering cognitive, social, and physical entities as interactive mechanisms. Realist evaluation attempts to identify and understand the nature of these mechanisms that are not possible to directly observe. (Armstrong, 2019.)

3.4.2 Test review methods

Testing reviews aim to test a specific hypothesis or to answer a question about the literature. The testing review category includes one of the major systematic literature review methods, the meta-analysis. The main difference between realist review and meta-analysis is that meta-analysis is a quantitative testing review, that involves statistical analysis to test the hypotheses while realist review is a qualitative testing review that looks at results in various contexts to find generalizability. The meta-analysis also relies on standardized data extraction methods, while realist review allows for flexible data extraction. (Xiao & Watson, 2019.)

Realist review's strength against meta-analysis is the ability to look at the research findings more in-depth to find out the environmental, situational, and implementational factors that might affect the mechanisms and connections between cause and effect. Naturally, the weakness of the realist review is the lack of statistical prowess, and that the execution of the review relies more on the author's interpretation of the studies risking potential bias. Meta-analysis excels, in turn, in estimating

construct-level correlations and determining sources of variance between different research findings and is also able to quantify the variances and separate the sources of variance (Derfuss, 2009).

3.4.3 Realist review method

Realist review, a literature review with realist ontology, seeks to explain how complex programs work or why they fail in certain contexts and settings by gathering a comprehensive package of literature to synthesize (Pawson et al., 2004). Pawson et al. (2004) present an example of a simple realist review analysis:

> "[R]esearchers would not claim that repeated observations of the application of a spark (X) to gunpowder and the subsequent explosions (Y) was a sufficient base on which to understand the causal relationship. Rather the connection (O) is established by what they know about the chemical composition of gunpowder and its instability when heat is applied (M). They also know that this mechanism is not always fired and that the explosion depends on other contextual features (C) such as the presence of oxygen and the absence of dampness." (Pawson et al., 2004.)

Pawson and Tilley (1997, p. 26) point out that the issue is rarely a simple as "does this work?", but the cause-effect relationships are multi-faceted and depend on the participants. The realist review attempts to thoroughly explain the cause-and-effect relationships by using the connection (O), underlying mechanisms (M), and contiguous contexts (C). (Pawson et al., 2004.)

In realist review, the mechanism (M) is not the service itself but the response to a stimulus – the method of how the context turns into the outcome (Dalkin, Greenhalgh, Jones, Cunningham, & Lhussier, 2015). It can also be the trigger to turn the context into the outcome via another mechanism (Dalkin et al., 2015). For example, kids' breakfast club before school can explain the increased classroom attentiveness by offering the kids a nutritious start to the day (M) or working as an energy diffuser before actual class (M). It could also feature negative effects via mechanisms like serving as an opportunity to plan misdeeds for the day (M) or be a catalyst to too chaotic energy that carries on to the classroom (M).

It is self-evident that the context (C) has a significant effect on the cause-and-effect relationship. In performance-based compensation, the cultural factor is one of the major variables that affects both the size and the effectiveness of the bonuses. In addition, the individual traits are likely to have an effect on the mechanisms and outcome how performance-based compensation works. The mechanics activated in certain contexts yield outcome-patterns (O). These are the intended and unintended results of triggering different mechanisms in different contexts (Pawson & Tilley, 1997, p. 66).

Pawson et al. (2004) argue that on the contrary to traditional pragmatism, realist review avoids "exemplary cases" claiming that the same intervention never gets implemented identically, and even if it did, the success gained in one context might not be transferable to a different social and institutional environment. Realist review focuses especially on answering the question "What works for whom in what circumstances, in what respects and how?" (Pawson et al., 2004).

Realist review is a relatively recent method in systematic literature reviews, introduced originally by Pawson and Tilley (1997). More prominently used in health studies, the method has not become very widespread with only 402 articles containing the two adjacent words "realist review" in their title when searching from Scopus. This is less than 0.3% of total systematic literature reviews found in Scopus. In accounting, the utilization of realist review or realist evaluation methods could not be found in published articles. In business and organizational studies, the findings are scarce, but some studies have been published.

3.4.4 Purpose of using realist review method

Realist review was developed to support policymaking in the health sector by evaluating framework integrity, reviewing rival frameworks, reviewing the same framework in different settings, or reviewing expectations versus practice (Pawson, Greenhalgh, Harvey, & Walshe, 2005). In a more general sense, the strength of realist review as a method is in the freedom given to the reviewer to adopt a flexible approach to evidence gathering and collection (Armstrong, 2019). Realist review does not attempt to debunk theories or reject causalities, but rather find out the underlying

"why" behind the causalities (Armstrong, 2019). For PBC literature, the aim to find the underlying mechanisms is especially powerful, since PBC studies are often contradictory in their findings and there are few to none universally proven causalities that would be effective in all situations and environments.

3.5 Criticism

The systematic literature review method is not without its weaknesses. It has been deemed too mechanical, without enough regard for the quality and interpretation (Torgerson, 2003, p. 11). This concern is manageable due to the wide variety of systematic review techniques available, and in some of them, there is room for interpretation. Especially the realist review method relies heavily on author interpretation (Xiao & Watson, 2019). The more room for interpretation, of course, the more suspect the study is to bias. Still, not only is the author's subject to bias in interpretation a valid point of criticism, but also the bias in the selection of the literature (Torgerson, 2003, p. 12). Torgerson (2003) explains that there is a risk of choosing research results that are of poor quality or irrelevant altogether, which would influence the final synthesis (p. 12). In addition, there is a possibility of negative or null results that have not been published at all due to them being uninteresting or unoriginal for the journal editors (Torgerson, 2003, p. 64). Ultimately, a systematic literature review is subject to the author's values and interpretation, highlighting the importance to acknowledge these biases during the systematic literature review process (Torgerson, 2003, p. 12).

For realist review, the analysis of complex systems poses limitations for the reviewer especially. The reviewer has a limit on how much of the content can be covered, so the review question needs to be carefully determined. Additionally, the reviewer needs to not only be careful in analyzing the abundance of information in the articles but also exercise rigor in finding support for causalities from multiple studies. And, since the realist review's purpose is to act as a basis for policymaking, the recommendations for action need to be carefully worded and to avoid stating "hard and fast truths". (Pawson et al., 2005.)

4 RESEARCH METHOD AND MATERIAL

4.1 Research plan

A systematic literature review is systematically conducted according to rules set *a priori*. There are multiple slightly differing baseline structures of systematic literature reviews that are generally followed. Realist review follows mostly the same steps as a traditional systematic literature review, with minor differences in emphasis, duration, order, and methodological content of each step (Pawson et al., 2004). Table 2 lists the differences between the systematic literature review template for meta-analysis as presented by Torgerson (2003, p. 24-25) and the realist review template presented by Pawson et al. (2004).

Table 3: Systematic literature review process compared with a realist review process

Step	Systematic Literature Review (Torgerson, 2003, p. 24-25)	Realist Review (Pawson et al., 2004)
1	Write plan of research: - Establish research question(s) - Establish objectives and scope of the review - Define the theoretical, empirical and conceptual background - Establish the methods for searching, screening, data extraction, quality appraisal and synthesis	Clarify scope of the review: - Identify review question - Refine purpose of review - Articulate key theories to be explored
2	Specify inclusion and exclusion criteria.	Search for relevant evidence, refining inclusion criteria in the light of emerging data.
3	Search for literature, and optimally screen the literature by at least two reviewers. Firstly, based on titles and abstracts and secondly based on full papers.	Appraise quality of studies using judgement to supplement formal checklists and considering relevance and rigour from a 'fitness for purpose' perspective.
4	Describe and classify studies. Extract enough data for an in-depth review.	Extract different data from different studies using an eclectic and iterative approach.
5	Quality appraisal for internal and external validity, and data extraction.	Synthesize data to achieve refinement of programme theory – that is, to determine what works for whom, how and under what circumstances.
6	Summarize extracted data in a synthesis.	Make recommendations, especially with reference to contextual issues for particular policymakers at particular times.
7	Interpret the synthesized data in a report.	Disseminate findings and evaluate extent to which existing programmes are adjusted to take account of elements of programme theory revealed by the review.

In the following sections in this chapter, the research plan and methods will be discussed in detail. The data extraction is presented in an appendix and the synthesis is presented in chapter five. The recommendations and evaluation of findings are presented in chapters six and seven.

This research follows the structure of the Realist Review presented by Pawson et al. (2005):

1. Clarify the scope of the review
2. Selection of evidence
3. Appraisal of evidence
4. Data extraction
5. Data synthesis
6. Make recommendations
7. Discussion and conclusions

4.2 Scope of the review

The main question of the review is "what works in PBC, why and in what context?". Still, an equally important question is "what does not work, why, and in what context?". The purpose of the systematic literature review is to find the frontier of PBC research and synthesize the findings for decision-making in small- and medium-sized firms, to support them in designing a PBC system.

4.3 Selection of evidence

4.3.1 Criteria

In the systematic literature review, this thesis does not distinguish interpretative research from positivist research, since limiting the systematic literature review to one or the other would significantly narrow down the results and consequently would compromise the usefulness of the synthesis to practice. Also, only empirical studies or experimental studies are used, and theory papers are excluded.

Selection criteria for the literature:

- Includes one of the following search terms:
  - "bonus*"

  - "performance-based incentive*"
  - "performance-based compensation"
  - "performance-based pay"
  - "performance incentive*"
  - "performance compensation"
  - "performance pay"
  - "pay for performance"
  - "incentive contract*"
  - "incentive system*"
  - "incentive structure*"
- Addresses white-collar employee, blue-collar employee, or non-executive manager performance-based compensation.
- Is an empirical study, experiment, field test or a case study (i.e. theory, meta-analysis and comment papers are excluded).
- Article is published in one of the highly regarded accounting journals:
  - Accounting Research
  - Journal Of Accounting And Economics
  - Journal Of Accounting Research
  - Accounting Review
  - European Accounting Review
  - Journal Of Accounting And Public Policy
  - Journal Of International Accounting Auditing And Taxation
  - Management Accounting Research
  - Review Of Accounting Studies
  - Accounting And Business Research
  - Journal Of Accounting Auditing And Finance
  - Journal Of Business Finance And Accounting
  - Accounting Organizations And Society
  - International Journal Of Accounting
  - Abacus
  - British Accounting Review
  - Accounting Auditing Accountability Journal
  - Accounting Auditing And Accountability Journal
  - Accounting Horizons

    - Critical Perspectives On Accounting
    - Behavioral Research In Accounting
    - Journal Of Accounting Literature
    - Accounting Forum
- Is in English.
- Is available and not behind a paywall.

The search tool utilized is Elsevier's Scopus, which includes all the journals listed above. The search criteria were defined by using an iterative process with different search terms and criteria using a "trial-and-error" process, using various search terms, and filtering by the filters available in Scopus. This process is explained in the next sections.

4.3.2 Filtering by publication

In Scopus without any other filters, searching for "performance-based bonus", "performance-based incentive*", "performance-based compensation" and "performance-based pay" for hits in keywords, abstracts, or article titles finds 464 articles. This number of hits is very low, since using such rigid search terms drops out many studies that study, for example, fairness perceptions and perception of justice in bonus systems. If the search terms are changed to the following terms: "bonus*", "incentive*", "performance-based compensation" and "performance-based pay" the number of results increases to 117 260 articles, which is quite expected when using commonly occurring words like incentive and bonus. While it is necessary to avoid losing relevant PBC articles that do not mention PBC explicitly, filtering PBC literature from over a hundred thousand hits is not possible.

One option would be to filter by the themes based on the research framework but using strictly defined variables in the search risks losing relevant studies. The goal is to find also *a priori* unconsidered elements in the framework of variables affecting PBC systems. Consequently, it seems the search terms need to have a more supporting role than a direct filtering role in this search, so the search terms are left very open-ended, and asterisks are used to allow for plural forms of the words.

A better way to limit the size of the sample is to limit the scope by selecting journals only from the field of accounting, which automatically significantly limits the number of articles found with the search terms. Selecting only highly regarded journals also ensures that the articles in the literature review are peer-reviewed and held in high regard. The weakness of this approach is excluding some "lower-ranked" studies on PBC, which have not been published in major publications. This should not be a significant issue as the purpose of this review is to find the frontier of PBC research and to make sense of the current generally accepted findings. Lacking findings from lower-ranked journals would not likely change the overall results of the study, even if they would provide additional insight.

The criterion for choosing the journals is to use Academic Journal Guide ranking. Those that have a score of 3 or higher in the accounting section are chosen, since they are considered to be the most prestigious journals in the field (Chartered Association of Business Schools, 2018). This also ensures the validity of the studies, as the journals with a score of 3 or higher are evaluated to publish original and well-executed research papers that are held in high regard with good submission rates, heavy refereeing and careful selection of the published articles (Chartered Association of Business Schools, 2018). The only concern of limiting the journals with a score of three instead of lowering it to two is that lower-ranked journals might publish more practitioner-oriented articles (Chartered Association of Business Schools, 2018). However, including journals ranked with the score two would increase the number of articles in the sample and consequently create an unrealistically high workload.

4.3.3 Filtering by title, keywords, and abstract

After filtering by journals, the sample with the search terms "bonus*", "incentive*", "performance-based compensation", and "performance-based pay" is 201 articles. After the initial searches with the terms, a new term for PBC came up: "pay for performance". Including this search term added further 10 articles to the sample.

The search terms require the words exactly as stated in the search, for example, "performance-based compensation" needs to be exactly in that order instead of "performance-based" and "compensation" separately. As a result, it seems that the

listed search terms leave out some relevant studies. To find out if the current search terms have missed relevant articles, I conducted a search that allows the words in any order. This search yielded 736 results compared to the previous 211, which I browsed through to notice at least 2 articles that were missing from the original sample. While browsing, instead of picking these articles directly to the sample or using this sample as the base sample, I took the PBC keywords that were used in these articles and added them to the search. The reason I do not use this sample by itself is that articles found with the looser search terms mostly cover other topics than PBC so the selection of the articles would have been even more subjective, prone to error, and difficult to replicate.

The search terms that were generated from the above method were "incentive structure*", "incentive contract*" and "incentive system*" and yielded additional 82 articles to create a total sample of 283 articles.

4.3.4 Filtering by subject and type

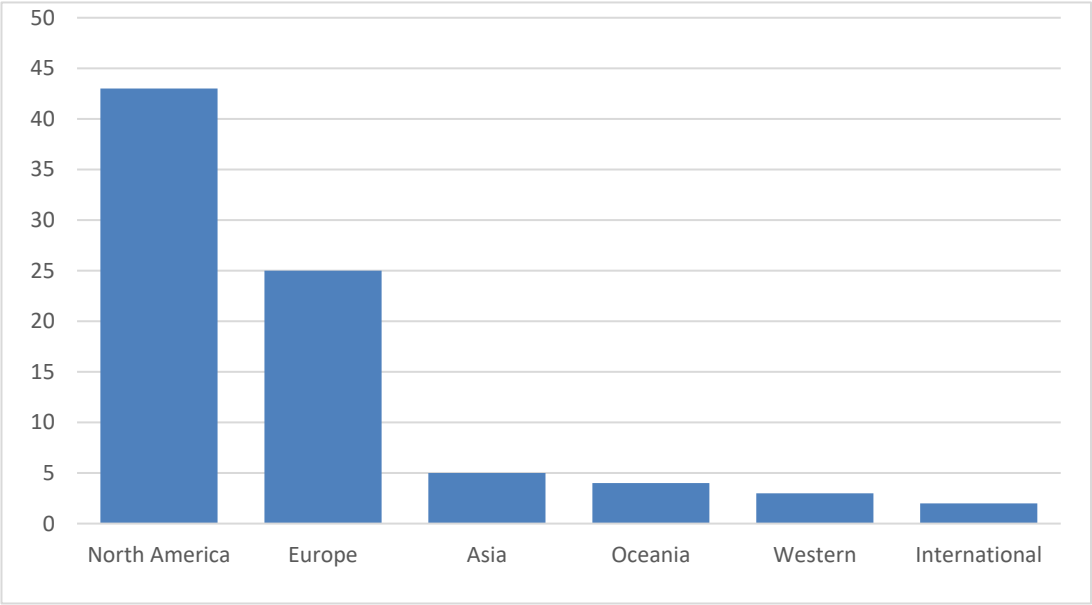
The main goal of the study is to be able to synthesize scientific findings for use in non-executive PBC systems. Literature about blue-collar PBC systems is included in the study since many studies do not distinguish between blue-collar and white-collar PBC. Also, blue-collar and white-collar work might sometimes be of equal level of complexity, and sometimes white-collar work output being more easily measurable than blue-collar work output. From this perspective, research findings for blue-collar employees, white-collar employees, and managers are all relevant as it is often difficult to distinguish work content and complexity by job title alone.

CEO compensation, earnings management, and corporate governance are generally linked to compensation and bonus literature, but for this thesis, these are out of scope and the literature regarding CEO compensation, earnings management, and corporate governance are excluded from the realist review. Earnings management literature is excluded because most of the time employees and sometimes even managers have very limited power to affect earnings management decisions. CEO and Executive managers' decision-making power is considered to be powerful enough to create measurable outcomes in firm performance, which makes the evaluation of CEO and Executive performance different from employees and managers who do not

necessarily contribute much to the quantifiable firm performance metrics by themselves. Additionally, the methods of CEO and Executive compensation include significantly more equity components for bonus payments and key financial figures as performance targets, that are less relevant in PBC at the lower levels of the organization.

Based on these criteria, the articles that focus on executive compensation, earnings management, or corporate governance are excluded based on the title. If there is even a slight likelihood that the article includes findings for PBC they are evaluated based on the abstract, and ultimately based on the content of the article. After filtering by search terms and journal the total sample was 283 articles. From this sample, 78 CEO and Executive compensation articles were excluded, and 23 earnings management-related articles were excluded. Additionally, 58 articles were excluded for not being related to PBC. This yielded a sample of 123 articles.

Figure 3: Research locations in the literature review sample

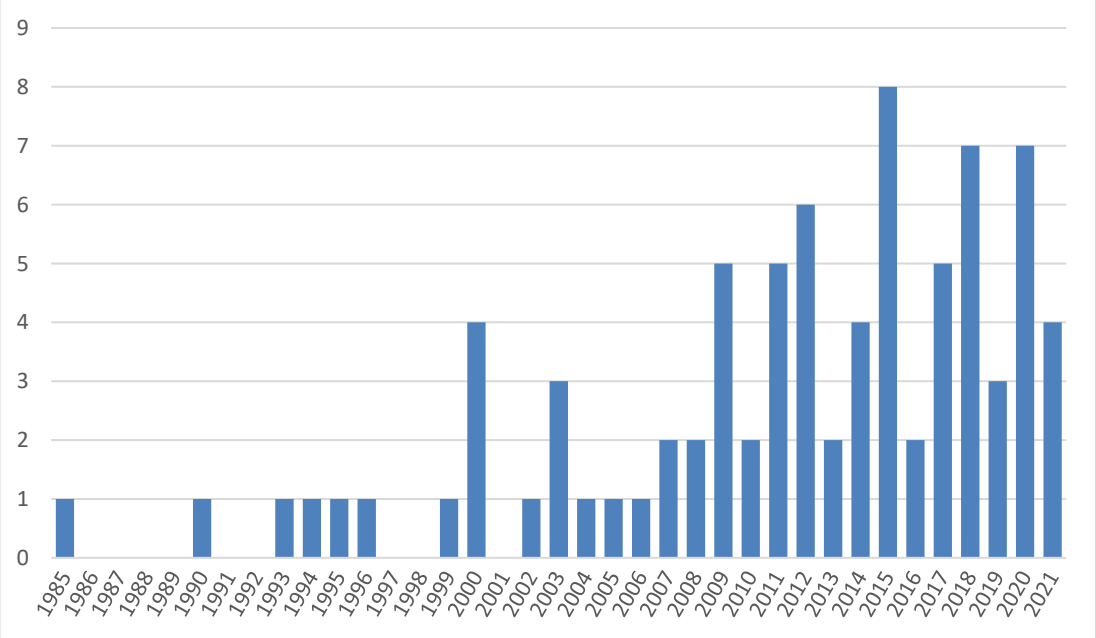


4.3.5 Search results

From the sample of 123, 37 theory articles were excluded after reading through the article contents. Four more were excluded due to unavailability or based on the article content during the literature review, resulting in a final sample of 82 articles.

Most of the research in the articles was conducted in Western countries, North America (43) and Europe (24) being the most dominant ones, with three articles that were labeled "Western" research mixing samples from North America and Europe and two articles with international samples. Figure 3 visualizes the lack of Asian research with only five articles based on samples from China, Taiwan, and South Korea. The published PBC literature in this literature review is completely devoid of South American or African research. Based on the focus on Western countries in the research, the findings of this literature review apply to Western cultures only, and generalizations to other cultures should be approached with care. There are, however, large variances within the Western cultures as well.

Figure 4: Articles in the literature review sample per year published



PBC is ultimately a very young research subject, as is management accounting research as a whole. The majority of the studies that were found during the literature

search are less than 20 years old as can be seen in Figure 4, with the older articles mostly handling piece-rate compensation. The articles in this literature review also present a wide array of different findings within the subject of PBC, indicating that the work to make sense of PBC has only begun.

4.4 Data extraction

The findings from the articles will be extracted with the principle presented earlier, aiming to form a background for the causality "if (X) then (Y)", by defining the contiguous contexts (C) that are connected (O) via underlying mechanisms (M).

First, all the articles were read through, and theory papers were excluded. Also, the findings from each article were carefully synthesized in the realist review form of listing causality by context, connection, and mechanism attempting to grasp the fundamental findings of the study without excessive interpretation. This first step of the review yielded 57 different realist review statements. Then, the statements were synthesized with other studies' findings, by consolidating information, changing the wording, and combining similar findings. This process resulted in the final realist review appendix that has 37 statements that answer the 10 hypotheses. The findings from the realist review are synthesized in the following chapter.

5 REALIST REVIEW

5.1 The effectiveness of PBC

First and foremost, PBC is not considered a practice that is always beneficial for firm performance. Nevertheless, the literature review shows that most of the time PBC has a positive effect.

> **Statement 1A**
> PBC (C) increases firm performance (O), namely employee performance (O) and output quality (O) because PBC increases motivation to perform better (M), and motivates employees to learn how to perform better (M). PBC also reduces over-optimism (M), increases teamwork (M), and increases goal congruence (M). The positive outcome is observed in at least the following cases: Work is complex (C), employees have not explicitly voiced a preference for money bonuses (C), and PBC is rewarded on dimensions that increase firm performance (C).

Based on the literature review PBC improves the goal congruence and alleviates the agency problem. PBC increases firm performance by increasing the employee's work output and quality (Akinyele, Arnold, & Sutton, 2020; Banker, Lee, & Potter, 1996; Banker, Potter, & Srinivasan, 2000b; Román, 2009; Unger, Szczesny, & Holderried, 2020) and motivates employees to learn how to do their work better (Banker et al., 1996, 2000b; Luft, 1994). The majority of studies supporting the effectiveness of PBC in the above sentence are quantitative studies conducted in North America. While these articles showed that PBC increases teamwork it is likely that in some cultures PBC does not have beneficial effect on teamwork, considering Aycan's (2005) findings that in-group harmony is important in collectivist cultures and individual rewards might invoke jealousy. Goal congruence and the motivational effect to learn to do the work better could be generalizable to outside of North America as well.

The performance-increasing effects of PBC do not hold in all situations. In some cases, PBC has a less beneficial effect, no effect, or even negative effect on firm performance.

> **Statement 1B**
> PBC (C) is less effective (O) when it makes organizational structures too inflexible (M) and when intrinsic motivation is high (C), or employees are committed to firm values (C) because employees are motivated by other things

than monetary bonuses (M). The ineffectiveness can also be observed when employees are not committed to the firm in the long term (C). Additionally, strong monitoring (C) reduces the effectiveness of PBC (O), because of employees perceiving the monitoring negatively (M). Also, if PBC dimensions do not match with desired output (C) the performance is hindered (O) due to discouraged effort towards voluntary work (M) and increased misreporting (M).

There are organizations where employees' internal goals are already aligned with organizational goals and the employees are highly motivated to do their work. These organizations with high goal congruence are most prevalent in healthcare and non-profit sectors where the employees have internal motivation to serve their customers in the best possible way, like hospitals treating patients or non-profits helping people in unfortunate circumstances (Eldenburg, Gaertner, & Goodman, 2015; Kluvers & Tippett, 2011). PBC might not be effective if it negatively affects the internal dynamics and norms by contradicting with firm values or increasing monitoring and organizational stiffness (Eldenburg et al., 2015; Friis, Hansen, & Vámosi, 2015; Kluvers & Tippett, 2011). Akinyele et al. (2020) find that when employees are aware of their organization's value statement the effectiveness of PBC is reduced. In conclusion, if a firm already has employees who are committed to the firm's values and goals, it is possible that a PBC system will not yield significant effects on performance.

The negative effect and ineffectiveness of PBC in the above contexts is supported by studies conducted in Europe and in North America. Many of these studies were qualitative as well, indicating that quantitative studies might not grasp the full picture of the mechanisms of PBC. It could also be that qualitative studies highlight negative outliers and that in large quantitative samples these are not necessarily statistically significant. Nonetheless, PBC has a risk of being ineffective or having negative effects in any cultures when certain contexts and mechanisms mentioned above are in place.

5.2 Performance measurement

The basis for compensating for performance is accurately measuring performance. In reality, completely accurate performance measurement in white-collar work does not exist. There are always dimensions of work that are difficult to capture with objective

metrics, like helping other employees, taking time to put the effort into client relations, contributing to developing the workplace, and other efforts that do not show in the bottom line. At worst, these efforts are crucial to the firm but are not adequately captured in performance measurement and the PBC system incentivizes the employee to stop putting effort into these key tasks (Eldenburg et al., 2015; Merchant & Riccaboni, 1990). If the performance cannot be measured accurately, the weight on PBC could be reduced and more emphasis put on fixed compensation (Ittner, C. D., Larcker, & Pizzini, 2007).

> **Statement 2A**
> When performance measurement is possible to do more accurately (C), and the weight on PBC can be increased (C) the performance is increased (O), due to reduced compression bias (M). Accurate external performance standards (C) also mitigate gaming issues (O) as external targets cannot be manipulated (M).

The statement 2A is formed based on studies from Europe, North America and Asia. Notably, even with relatively low bonuses the employee performance increases when the performance measurement is accurate (Unger et al., 2020). Ahn, Hwang and Kim (2010) and Unger et al. (2020) find that objective measures are superior to subjective measures to achieve that accuracy. Ahn et al. (2010) argue that one of the reasons that objective measures are better is that it reduces the compression bias, which is the tendency of subjective evaluation to mediate towards averages. Murphy (2000) suggests that objective measures should use external targets to avoid manager manipulation.

> **Statement 2B**
> Suboptimal dimensions of measurement (C) risk poor performance (O) because of short-term focus (M), earnings management (M), or misleading targets (M).

The statement 2B explains the same effect, but in reverse to the statement 2A, phrasing that suboptimal performance measurement risks reduced performance. Huang, Marquardt and Zhang (2014) show that increasing weight on rewarding based on EPS growth can risk overleveraging or avoidance of EPS dilution, which in some cases can be harmful to overall firm performance. Additionally, Baker et al. (1994) show multiple examples where the measurement of wrong things has caused significant

trouble for the firm as managers try to maximize their earnings by engaging in suboptimal activities.

In conclusion, the benefit of accurate performance measures based on objective measures and unmanipulable targets is undeniable. However, in many instances accurate performance measurement is not possible, and the firm needs to find a compromise to direct the employees' effort towards the right things.

5.3 Subjective measures, peer-reviews, and manager discretion

Objective performance measures rarely grasp all the dimensions of performance, especially when environments are uncertain, and work is very complex and difficult to measure by quantifiable outputs. To alleviate the problem, subjective performance evaluation can be used to complement imperfect objective performance measurement, which makes it also possible to increase the weight on PBC without harmful side-effects (Anderson, Dekker, Sedatole, & Wiersma, 2020; Gibbs, Merchant, Van der Stede, & Vargus, 2004; Woods, 2012). The firm can utilize team-based performance measurement, peer-reviewing, manager discretion and subjective performance measurement dimensions.

Subjective performance measures could be for example annual subjective performance evaluations or peer-reviews. The dimensions of measurement can be, for example, helping colleagues and customer satisfaction. In addition, manager discretion can be used to define how much bonus should be paid, how bonus pools should be allocated between teams and team members, and whether targets should be changed retrospectively based on changes in external factors that have affected the achievement of bonus targets. Subjective performance measurement is much less straightforward than objective performance measurement, resulting in seven realist review statements.

> **Statement 3A**
> Subjective PBC (C) is effective in supporting objective PBC (O) when objective measures fail to encourage cooperation (M) or long-term focus (M), and when objective performance is noisy (M). Also, effectiveness is elevated when the strategic business unit is young (C), creativity is required (C), and in the case of team-based PBC, the team tasks are not interdependent of each other (C).

The especially important mechanism in the statement 3A is that subjective PBC has a key role in encouraging long-term focus (Aranda, Arellano, & Davila, 2019; Gibbs et al., 2004). These effects are observed in North America, Asia and Europe, with the majority being quantitative studies based on data from large firms or databases. Most of the studies behind the above statement also utilize data directly collected from employees.

> **Statement 3B**
> The use of nonfinancial and HR measures (C), especially in situations with strong interdependence between business units (C), is beneficial (O) when pay structure is hierarchical and the human capital has strong emphasis (M) when nonfinancial measures can reduce the noise of accounting measures (M) and because of metrics with long-term emphasis like customer satisfaction (M).

The statement 3B adds detail to the statement 3A by providing more detailed context, especially the use of nonfinancial and HR measures as the measures. The generalizable statement is that the nonfinancial measures complement financial measures well and increase cooperation in a setting where the human capital has strong emphasis in the business unit (Banker, Lee, Potter, & Srinivasan, 2000a; Bouwens & Van Lent, 2007). The details of mechanics are from different studies based on quantitative real-life data in Europe and North America. Two of the studies explore employee-level data and one study utilizes firm-level aggregate data.

> **Statement 3C**
> Subjectivity can be used (C) to counter environmental heterogeneity (O) in commonly used firm-wide PBC contracts (M) because environmental uncertainty makes the PBC effect more muted (M).

As mentioned in chapter two, accuracy in performance measurement is a key element in an effective PBC system. The statement 3C is based on quantitative research from North America, Europe and Australia utilizing real life aggregate branch-level data in two studies and employee-level data in one study. Aranda et al. (2019), Anderson et al. (2020) and Abernethy, Dekker and Schulz (2015) conclude that if a firm uses a general PBC system for all of its business units across the world, the subjectivity allows for adjusting for environmental uncertainty. Although, the discretion power in distributing bonuses that is usually given to combat such environmental uncertainty does not always result in more accurate PBC, as stated in statement 3G. In the context

of PBC the discretion in distributing bonuses and subjective performance measurement can slightly overlap, but generally subjective performance measures mean non-objective performance measurement methods and discretion in distributing bonuses means ex-post adjustments of bonus levels on manager discretion.

> **Statement 3D**
> Peer-review-based PBC (C) increases performance (O), because of the higher accuracy of compensation in a team setting (M) and limited risk of bias in peer-review quality (M) especially when teams are homogenous (M). Peer-reviewing also promotes knowledge sharing (M). Peer-review is also effective (O) when cooperation and knowledge sharing among team members is beneficial for the member (M), especially when the team members are team-oriented instead of individually oriented (C).

To utilize subjective dimensions of performance in PBC, someone needs to conduct the subjective review. The most successful scenario in subjective evaluation is when a team, which has good knowledge of each other's tasks and performance, conducts a peer-review on top of the manager reviews (Arnold, Hannan, & Tafkov, 2018; Haesebrouck, Van den Abbeele, & Williamson, 2021). Additionally, if the team members benefit from knowledge sharing and cooperation, peer-reviewing is effective (Arnold et al., 2018; Haesebrouck, Cools, & Van Den Abbeele, 2018). The benefits do not only come in increased performance because of increased accuracy in subjective evaluation but also because the employee has an incentive for knowledge sharing and cooperation since those are the dimensions that reward the PBC (Haesebrouck et al., 2018, 2021; Kuang & Moser, 2011).

The statement 3D is based on North American and European experimental studies conducted on university students, with only Hwang, Erkens and Evans (2009) supporting the benefit of knowledge sharing with empirical evidence from 1780 North American manufacturing managers. Despite the lack of empirical evidence from the field, peer-reviews as a complement to manager review seems to increase performance when the team members benefit from knowledge sharing and teamwork.

> **Statement 3E**
> With a heterogenous team, (C) team-based PBC is less effective (O) with both subjective manager evaluation (C) and peer-review evaluation (C) because the inability to accurately review peers causes performance-reward mismatch (M),

and discretion in manager evaluation reduces team cohesion and discourages helping (M).

In statement 3E the wording is important. While the team-based PBC in suboptimal context is less effective, it still is effective in increasing performance (Arnold et al., 2018; Arnold, & Tafkov, 2019). However, the statement 3E works only as a supportive claim to the statement 3D at best since the statement 3E is supported only two experimental studies on university students which are both conducted by basically the same researchers. Nonetheless, the statement clarifies some of the contexts and mechanisms where there is a risk of inaccurate performance evaluation even when utilizing manager evaluation and peer-reviews.

Statement 3F
Subjective performance measures (C) induce uncertainty and perceptions of favoritism in evaluation (O) when subjectivity allows the managers to evaluate based on inappropriate criteria (C) and change the criteria rapidly (C) because subjective measures are susceptible to manager's prejudice and bias (M). Namely, managers tend to mediate extreme reviews (M), punish good performers less than bad performers (M) and at worst, poorly evaluate employees they wish to push out of the organization (M).

The statement 3F presents the opposite argument to the hypothesis. Specifically, using subjective performance measurement in PBC can sometimes introduce negative effects. The context where subjectivity allows for measurement on inappropriate criteria and gives excessive evaluation power to manager seems to facilitate the mechanisms that yield negative outcomes. The findings are based on quantitative, qualitative, and experimental data. The evidence includes a study on firm-level aggregate data from South Korea as well as studies from Europe and North America. In short, utilizing subjective performance measures is not a shortcut to happiness but the contexts and mechanisms need to be considered when designing the subjective measures to the PBC.

Statement 3G
Giving managers discretionary power over distributing bonuses (C) does not make bonus payments more accurate (O) due to anchoring heuristic (M) and reluctance to make downward adjustments (M), and manager tendency to battle unfairness more than promote fairness even if it incurs extra costs in evaluation (M). Especially during shocks (C) managers are reluctant to make changes to avoid upsetting the employees (M).

As statement 3G shows, giving managers discretionary power over bonus payments does not come without downsides. Managers might evaluate inappropriately out of ignorance or to further their personal goals, and are subject to bias and prejudice (Bol, Estep, Moers, & Peecher, 2018; Bol, Hecht, & Smith, 2015; Upton & Arrington, 2012). Also, managers tend to avoid extreme reviews effectively punishing good performers and rewarding poor performers (Ahn et al., 2010; Ittner, Larcker, & Meyer, 2003). The additional burden of evaluation might cause the manager to acquire costly performance information to make more accurate evaluations (Maas, Van Rinsum, & Towry, 2012). The benefit of the discretion is the increased fairness in PBC and increased manager awareness on the dimensions that are measured and how the manager can affect them even if the objective accuracy is hindered (Maas et al., 2012; Tuomela, 2005). The statement is supported by experimental studies on university students in North America and Europe, as well as a qualitative study from Europe and a quantitative study from an international audit firm.

This statement does not state if giving the manager discretionary power in bonus distribution can be beneficial to firm performance. Giving managers discretionary power in ex-post target adjustment has a performance-increasing effect because the achievement of targets increases the perception of fairness (Voußem et al., 2016) and it has the potential to decrease year-end stagnation in performance for those who have already met the targets as well as those who are way behind the targets (Knauer, Sommer, & Wöhrmann, 2017). The benefits of managers being able to make discretionary ex-post adjustments are further discussed in chapters 5.4 and 5.8.

5.4 Fairness perceptions

The PBC is expected to have a better effect in increasing the firm performance if the employee perceives the PBC as fair (Burney, Henle, & Widener, 2009; Grabner & Martin, 2021). Even more importantly, if the employee perceives the PBC as unfair the firm performance is likely decreased (Grabner & Martin, 2021; Liu & Zhang, 2015; Oblak et al., 2018).

Statement 4A
The fairer the employee perceives the PBC (C), the better the organizational

performance (O) because organizational citizenship behavior increases (M) and motivation increases (M), and vice versa if the PBC is perceived as unfair (C) it hinders performance (O).

Statement 4B
Employees perceive PBC as fairer (O) when the firm signals trust (M). For example, when PBC has increased technical validity (C), it reflects the firm strategy (C), by offering signing bonus (C), utilizing subjective performance measures (C), or by offering choice in bonus contract type (bonus/penalty) (C) and the firm has an otherwise legitimate and fair compensation policy (C).

A consequence of inaccurate measurement of performance is the risk of employees perceiving the PBC system as unfair. Perceiving the PBC as fair increases organizational citizenship behavior which increases firm performance (Burney et al., 2009; Oblak et al., 2018; Voußem et al., 2016). Voußem et al. (2016) define an inverted U-shaped relationship between fairness perceptions and emphasis on subjective metrics in evaluation. This highlights the importance of supporting the objective metrics with subjective metrics, and that utilizing subjective metrics to complement objective metrics likely increases the employees' perceptions of fairness. Oblak et al. (2018) mention that employees compare themselves with others, so having fair compensation compared to their peers is more important to them than how the compensation itself is determined. There is a difference in how different personalities and cultures perceive the fairness of PBC. For example, ambitious individuals that are more skilled and risk-tolerant prefer having a PBC contract over not having one (Brown, Farrington, & Sprinkle, 2016; Fehrenbacher, Kaplan, & Pedell, 2017).

The studies supporting claims 4A and 4B are mostly based in North America, with two studies from Europe. Both experimental settings on university students and quantitative data from the field have been used in the studies.

5.5 Personal and cultural differences

There are widely varying differences between people and cultures how PBC is perceived and which kind of contract framing employees prefer. The statement 5B has slightly overlapping findings with the chapter 5.7 about contract framing but is treated in this chapter from the perspective of employee preference differences.

Statement 5A
Individuals (C) tend to prefer contracts with PBC (O) when they are more skilled, prefer more risk, look for achievements and blame themselves less for shortcomings (M).

The statement 5A is based on two experimental studies conducted on university students in North America and in Europe. The statement supports the general understanding that ambitious individuals prefer compensation system that rewards on good performance.

Statement 5B
Involving the employee in the negotiation of PBC metrics and targets (C) does not yield good results (O), because employees do not necessarily know what drives their work performance (M), they might sandbag the budgeting process (M) and they generally choose PBC system that appears less risky even if it is less valuable (M).

It is rarely beneficial to heavily involve employees in the setting of targets of their own PBC. While the statement 5B mentions that involving employees in the planning of PBC metrics and targets does contain mostly negative findings, it is important to not completely alienate employees from the process as it risks the performance targets being perceived as unfair (Grabner & Martin, 2021). The statement 5B is supported by both experimental and quantitative data, but only by studies conducted in North America. There is a risk that the statement is inaccurate in other cultural settings than in North America. For example, Lourenço (2020) finds that PBC is more effective specifically for those who report a low preference for it. This could be a cultural difference since in Europe the preference for material success is lower than in North America, so the lower preference for monetary compensation could be explained by differences between Europe and North America. But, Lourenço's study is conducted in North America. This suggests that there are cultural nuances in PBC that are very difficult to grasp in any generalization.

Statement 5C
There are large regional differences in PBC (O), as Chinese and European firms use PBC more rarely than North American firms (C), because of lack of experience with PBC systems (M) – especially when firms are state owned (O). Additionally, differences can be caused by significantly higher tax rate reducing the net reward (M), differences in power distance (M) and lower level

of cultural preference for competitiveness, achievement, and material success (M).

As the statement 5C reveals, the mechanisms behind the cultural differences are complex and unclear. There are interesting studies by Merchant, Van der Stede, Lin and Yu (2011), Jansen, Merchant and Van der Stede (2009) and Gibbs et al. (2004) that conduct similar research in different cultural settings. Drawing any single definite conclusion of the effect of cultural differences from the findings is difficult. These studies are a good start to the research of cultural differences in PBC, however. The effect of cultural differences might be a single biggest mystery in the contexts and mechanisms of PBC. Merchant et al. (2011) suggest further studies isolating the variables that could cause differences like the cultural importance of personal relationships over rules, cultural leadership styles and the researched industry differences.

5.6 Employee attraction and retention

On top of motivating employees, PBC systems can work as a tool to attract and retain talent (Banker et al., 2000a). Also, the nature of the PBC system can attract a certain type of individuals and be used already at employee selection (Abernethy et al., 2015).

Statement 6A
PBC (C) can be used to choose and attract skilled employees (O) because people who share the goals and risk tolerance are attracted by specific PBC attributes (M).

The statement 6A is supported by both experimental evidence and field data from three studies conducted in North America and one utilizing aggregate firm-level data from Australia. It seems that PBC is generally effective as one of the factors that attract new skilled employees and can also function as the selection of employees as more ambitious employees tend to prefer PBC contracts.

Statement 6B
PBC (C) can have a positive effect in retaining employees (O), by lowering performance targets (M), or a negative effect (O) by utilizing penalty contracts (M) especially when employees are skilled and high-quality (C).

Quantitative studies from North America and China assess the power of PBC in retaining employees, as stated in statement 6B. PBC has generally a positive effect on retaining employees when performance targets are met, but Van der Stede, Wu, A., and Wu, S. Y. C. (2020) find that employee turnover increases when PBC utilizes penalty contracts. It has been a long-standing question if penalty contracts are better than bonus contracts at exerting effort from employees, but penalty contracts seem to cause unintended cost by making the firm unattractive for new skilled employees.

5.7 Contract framing and risk

As mentioned in chapter 5.6, penalty contracts are not necessarily better than bonus contracts despite being more effective at exerting performance from employees. Bonus contracts are considered the safer, cheaper, and more universally effective choice in PBC (Luft, 1994; Van der Stede et al., 2020)

> **Statement 7A**
> Bonus contract, compared to penalty contract (C) is more effective (O) when targets are defined ex-post (C). When contracts are incomplete (C) bonus instead of a penalty (C) or giving the employee a choice between the two (C), indicates trust to the employee (M), and, on the opposite, using a penalty accelerates employee turnover (M). Employees also perceive a bonus better than a penalty (M). In the case where employees can affect the manager's penalty (C), there is also the possibility of retaliation against the manager (M).

The statement 7A suffers from the weakness that only one study out of the seven behind this statement is from real-life data and the rest are experiments. The empirical study was conducted in China while the experiments were conducted in various North American participant groups, indicating that the findings could hold universally. Generally, though, bonus contract seems to be the more attractive option of the contract frames.

> **Statement 7B**
> Using a penalty contract instead of a bonus contract is more powerful at exerting effort from employees (O) if employees perceive the compensation and organization as fair (C), because employees' tendency for loss aversion (M), but it also increases risk-taking (O).

In some settings penalty contracts are found to increase employee effort more than bonus contracts (Christ & Vance, 2018; Oblak et al., 2018; Van der Stede et al., 2020). Also, some employees rather choose penalty contracts over bonus contracts to exert more effort from themselves (Gonzalez, Hoffman, & Moser, 2020). Penalty contracts, despite all the negative effects, are efficient at exerting higher performance from employees if the compensation is perceived as fair (Christ & Vance, 2018; Oblak et al., 2018; Van der Stede et al., 2020). Nonetheless, if penalties are used in PBC there is a high risk that some employees perceive the penalties negatively, potentially nullifying the positive performance effects. The more significant problem from a penalty contract is the increased risk-taking unless that is the goal of the business unit.

The statement 7B is based on very similar sample of studies as the statement 7A, with two experimental studies and the same quantitative study from a Chinese sample as in 7A. It is generally accepted that penalties are more effective at exerting effort than bonuses in a controlled setting, so it is likely that the statement 7B is somewhat generalizable.

> **Statement 7C**
> Employee risk-taking can be avoided (O) by careful feedback of poor performance (C) because employees tend to compensate for poor performance by taking risk (M), by utilizing clawback provisions in high-risk investments (C) because managers are more liable for results (M), and by utilizing bonus instead of penalty contracts (C), especially in decisions that only affect loss size (M).

The increased risk-taking is not something a firm usually wishes to achieve with PBC. Clawback provisions can be utilized as a risk-moderating tool as clawback provisions lead to reduced risk-taking due to human tendency for loss aversion (Brink & Rankin, 2013). Careful giving of feedback on poor performance also mitigates the risk of employee feeling the need to compensate for poor performance by taking more risk. However, the statement 7C is only based on studies from experimental settings. The effect of these mechanisms and contexts in risk management need to be carefully evaluated as the sample does not present empirical real-life evidence on this statement.

5.8 Goals and targets

Setting the goals and performance targets for the employee is critical to achieving the performance-increasing effect. The organization must design the performance targets and annual goals so that the employee is motivated and focuses on the tasks that increase firm performance. Achieving goal congruence is not helpful if the goals do not reflect the firm strategy.

> **Statement 8A**
> Long-term performance can be increased (O) with greater reliance on long-run targets (C) because of increased long-term goal congruence (M), with deferral of bonus payments (C) or the use of stock as a bonus payment (C) because of the non-instant reward that rewards long-term focus (M).

If the organization wishes to focus on long-term growth, long-term targets are beneficial. Especially in a young business unit, the utilization of long-run targets increases performance (Govindarajan & Gupta, 1985). On top of long-term targets, long-horizon bonus payments like deferral of bonus payments and stock options encourage long-term focus (Chen, 2003; Cheng, Dinh, Schultze, & Assel, 2019).

The statement 8A is led by the oldest and one of the most cited studies in the sample. Govindarajan and Gupta's (1985) North American research on general managers of strategic business units studies the linkage between control systems and strategy, where the target setting is a key element. The same findings have since been confirmed with three other studies in the sample from North America, Asia and Europe. Both experimental and quantitative studies are utilized, indicating that it is likely that generally long-term targets and long-horizon rewards increase the firm's long-term performance.

> **Statement 8B**
> High profitability firms (C) do not adjust targets upwards when they are achieved (O) but adjust targets downwards when they are not achieved (O), to signal a commitment to long-term and alleviate incentive conflicts (M), while low-profitability firms engage in target ratcheting (C) that decreases performance (O) due to mixed motivation from penalizing good performance (M). Gaming and target ratcheting can be avoided (O) by utilizing peer performance comparison (C) because of increased accountability (M). Especially when peer-group is high quality (C), and if peer performance targets

can be defined ex-post instead of ex-ante (C) because higher targets can be set initially, and then adjusted (M).

The initial performance targets need to be realistic but challenging, as mentioned in goal-setting theory by Locke and Latham (2006). Often firms allow for ex-post adjustment of performance targets to maintain perception of fairness in PBC. Especially in heterogenous teams and organizations, it is difficult to avoid unfair bonus distribution based on only ex-ante targets as employee performance could vary and environmental negative shocks might affect only a part of the organization. Still, negative shocks are not the only source of concern. Good performance or positive external shocks in performance might lead to target ratcheting. Target ratcheting means when a set target is achieved, and the target is then increased for the next period – effectively punishing a good performer for achieving the targets. Well-performing organizations rarely adjust targets upward after a year of good performance, in other words, they do not engage in target ratcheting (Aranda et al., 2019; Indjejikian, Matějka, Merchant, & Van der Stede, 2014; Murphy, 2000). On the contrary, after a year of poor performance and not achieving targets, well-performing organizations tend to attempt to motivate employees by lowering the performance targets for the next year (Aranda et al., 2019; Indjejikian et al., 2014).

The statement 8B is complex and supported by quantitative real-life data from both Europe and North America. Behind the complexity of the mechanisms and contexts lies a simple generalization. Target ratcheting is not beneficial and adjusting targets downwards is beneficial when targets are not achieved.

Statement 8C
Difficult targets increase performance (O) in a team setting (C) by creating norms within the teams that promote supporting and higher performance (M). Target difficulty and PBC are complements when difficulty is high (M), so increasing PBC while increasing difficulty (C) mitigates performance reduction due to increased difficulty (O).

The goal-setting theory establishes that the more difficult the targets, the better the performance. The goal-setting theory expresses that the targets should be challenging but realistic, and the more difficult the target the better the reward should be (Locke & Latham, 2006). While this is fundamentally true, it is an oversimplification of both

goal-setting theory and the setting of targets in PBC systems. The goal-setting theory states that the fundamental performance driver is job motivation – the willingness to work towards the target. To invoke this willingness, on top of the pride in achieving difficult targets, the targets need to be clear and specific, the feedback from performance needs to be accurate and appropriate and it is sometimes beneficial to involve the employees in setting the targets (Hannan et al., 2008; Locke & Latham, 2006; Lourenço, 2020).

Matějka and Ray (2017) suggest that PBC and target difficulty are complements, and to achieve the best effect PBC should be increased with target difficulty. This would support the assumption that a firm cannot endlessly make targets more difficult to increase performance. Additionally, considering the statements 8B and 8D, the most beneficial setting would include initially difficult targets set ex-ante that can then be adjusted ex-post to increase the perception of fairness by achieving the targets. The statement 8C is supported by only two North American studies, but the statement's generalization is in line with the goal-setting theory and merely explains some of the mechanisms and contexts behind the effectiveness of difficult targets.

> **Statement 8D**
> Achievement of targets increases performance (O) because it enhances distributive fairness perception of employees (M) and because in a tournament setting (C) the increased number of winners reduces stagnation of performance of the top and bottom performers (M). If the number of employees who get the rewards in a tournament setting is low (C) it decreases performance (O) because of risk of sabotage (M) and low performers giving up early (M).

While difficult targets increase performance (Abul-Ezz, 1993; Locke & Latham, 2006; Matějka & Ray, 2017), not achieving targets decreases performance (Hartmann & Schreck, 2018; Knauer et al., 2017). The studies from experimental settings demonstrate this in a tournament setting where the achievement of targets, in other words a large proportion of winners in the tournament, produces higher performance than if there are only a few winners. The weakness of statement 8D is that the tournament setting causalities are only proven in experimental settings on university students. The quantitative study by Voußem et al. (2016) is the only study utilizing real-life data behind this claim. The key takeaway is the same as in 8C: achieving of targets increases the perception of fairness and consequently performance. In other

words, it is important for a well-functioning PBC that the employees feel like they can achieve their PBC targets.

5.9 Implementation

As Ittner et al. (2003) state, "implementation issues may be far more important to the success or failure of a balanced scorecard system than the scorecard's technical attributes". The same applies to nearly all performance measurement and PBC systems. While the technical validity is important, more important point is that the PBC is rewarded based on dimensions that reflect the strategy and organizational goals, and that the employees are welcoming of the new PBC system. If a system fails implementation, it does not matter how well it is constructed or designed. In addition to aiming for a successful implementation of the PBC system, the design and implementation process can also be an opportunity to crystallize and communicate the organizational goals and strategy.

> **Statement 9A**
> Implementation of PBC is a critical part and can succeed in increasing firm performance (O) by implementing during a time of good performance (C), because managers become more accepting of the system when it gives them more income (M). If management is motivated the implementation also facilitates collective learning and discussion about organizational goals and strategy (M), which also encourages other intra-organizations to adopt the PBC (O).

The statement 9A is supported by both quantitative and qualitative data, with three European studies and one quantitative North American study. The statement grasps the important factor when implementing any new system: the benefit of discussion. Tuomela (2005) and Ittner et al. (2003) find that the co-operation during the implementation was nearly as important as the functionality of the PBC system itself. Additionally, Merchant and Riccaboni (1990) state the obvious that if the PBC system yields good benefits the employees are much more likely to view the new system favourably, so implementing a PBC system during a period of growth and good profitability has higher success than implementation during a tougher period.

Statement 9B
PBC is an evolving process in an organization (C), so benefits are only realized after some time (O).

The statement 9B continues where the statement 9A left. On top of the aforementioned factors in implementation, the implementation needs time and effort to continuously develop the system. Sprinkle (2000) demonstrates that even in a controlled experimental setting the effects of PBC did not occur until the 15th period of a total of 60 periods. Bol and Moers (2010) concur with their findings from a European quantitative study and add that the learning does not stop at the implementation, but constant improvement is crucial in a PBC system implementation.

5.10 Feedback, recognition, and promotion incentives

While the focus of this thesis is on monetary incentives, this section briefly covers the non-monetary incentive findings from the literature. Feedback is discussed in multiple studies, yet in PBC literature the results are mixed if feedback is effective in increasing performance.

Statement 10A
Providing feedback to the employee (C) has mixed results (O). Relative performance feedback increases the performance (O) when the employee is compensated based on individual performance (C) but decreases the performance (O) if the employee performs worse than their peers (C). Some employees have no performance-affecting reaction to feedback at all despite the content (O). The situational differences arise because some employees appreciate the feedback as a valuable resource (M) and poor performers compensate poor feedback by doing unrelated tasks or taking more risks (M).

The statement 10A is based on three North American studies, two experimental and one based on data from a sales division of an US retail firm. The response to feedback is very likely dependent on culture, so this statement likely would need more evidence outside of North America. Nevertheless, the statement highlights the complexity of the effect of feedback.

Statement 10B
Recognition (C) because of an innate human desire for distinction (M), and, in the case of an employee who is more motivated by career progression than

> monetary rewards (C) implicit incentive to get promoted (M), leads to increase in performance (O).

Based on statement 10B, professional recognition and career growth are possible factors to consider when designing PBC. In some cases, PBC can be effectively complemented with recognition awards and implicit promises to get promoted after a good performance. However, the evidence from this sample is hardly conclusive as only two studies support statement 10B while the whole chapter 5.10 only refers to four studies in total, and three of them are from North America.

6 RECOMMENDATIONS

This thesis explores the literature about performance-based compensation for non-executive managers and collects findings from various elements of PBC. PBC is, most of the time, beneficial for firm performance. A sufficiently well implemented PBC system improves goal congruence, alleviates agency problem, increases employee work output, and increases work quality (Akinyele et al., 2020; Banker et al., 1996, 2000b; Román, 2009; Unger et al., 2020). PBC can also motivate the employees to learn to do their work better (Banker et al., 1996, 2000b; Luft, 1994) and can encourage cooperation among employees (Haesebrouck et al., 2018; Hwang et al., 2009; Román, 2009). PBC system and the PBC implementation process can help the company communicate their values and strategy to their employees to increase clarity and goal congruence within the organization (Bol & Moers, 2010; Tuomela, 2005; Widener, 2006). PBC can also support in new skilled employee recruitment by signaling firm values and attracting ambitious employees who prefer PBC contracts (Abernethy et al., 2015; Brink & Rankin, 2013; Brown et al., 2016). One of the PBC system's main drivers of performance is increasing the employee commitment to the organization. However, if the employees are already very committed and have high intrinsic motivation to perform, implementing a PBC system does not yield significant benefits (Eldenburg et al., 2015; Kluvers & Tippett, 2011). This could be the case in, for example, healthcare and non-profit sectors, where employees are value-driven and have a high intrinsic motivation.

PBC system needs to be designed and implemented well enough. A poorly implemented PBC is likely rejected by the employees and the PBC scheme is discontinued very quickly (Bol & Moers, 2010; Ittner et al., 2003). At worst, a poorly designed PBC system can cause significant harm to the firm by motivating the employees to do harmful actions to increase their short-term bonuses (Chen, 2003; Ittner et al., 2003; Jansen et al., 2009; Kunz & Pfaff, 2002). Generally, utilizing bonus contracts is more beneficial than penalty contracts (Christ, Sedatole, & Towry, 2012; Christ & Vance, 2018; Gonzalez et al., 2020; Van der Stede et al., 2020). Also, subjective performance measurement is a good complement to objective performance measurement to improve perceptions of fairness of the PBC (Burney et al., 2009; Grabner & Martin, 2021) and encourage cooperation, increase employee commitment,

and promote creativity (Anderson et al., 2020; Gibbs et al., 2004; Grabner, 2014). Subjectivity in performance evaluation and allowing for manager discretion in distribution of bonuses also helps when an internationally operating firm utilizes only a single PBC system, as it does not usually account for the regional differences. In these cases, the manager can adjust the bonuses to match the real performance and consequently increase the performance of the employees (Anderson et al., 2020; Aranda et al., 2019). Giving managers discretionary power needs to be done with caution, as managers tend to have bias and prejudice in their evaluation and can in some cases be harmful to the firm (Bol et al., 2015, 2018; Upton & Arrington, 2012). A way to alleviate manager bias is to utilize peer-reviews from colleagues to complement manager reviews, especially when the team-members are aware and knowledgeable of each other's work (Arnold et al., 2018; Drake, Haka, & Ravenscroft, 1999). The utilization of subjective evaluation is especially effective in increasing the perception of fairness. Perception of fairness is a significant driver of good performance in a firm and vice versa – perceptions of unfairness have a significant negative effect on performance (Burney et al., 2009; Oblak et al., 2018; Voußem et al., 2016). If the employees perceive the PBC system to have sufficient technical validity and that their compensation is fair compared to their peers, the PBC system is generally considered as fair (Burney et al., 2009; Oblak et al., 2018).

While it is important to have sufficiently accurate performance measurements to retain the perception of fairness, the setting of goals is another challenge in PBC. As goal-setting theory establishes, difficult targets and achievement of targets increase performance (Locke & Latham, 2006). External goals pose the difficulty of being subjective to external shocks while internally measured goals are sometimes subject to manipulation. The difficulty of accurately measuring objective performance can be balanced with subjective performance measurement, and balancing between fixed salary and PBC, as the weight on PBC can be increased when the measurements are more accurate (Ittner et al., 2007). If there is a large number of winners in a tournament setting or if targets are adjusted ex-post to provide rewards despite the employee not quite meeting the targets, the employee performance is the most likely to increase (Knauer et al., 2017; Voußem et al., 2016). Additionally, setting long-term targets and utilizing long-horizon bonus payments like deferral of bonus payments or using stock

as bonus payments will encourage long-term focus in decision-making (Chen, 2003; Cheng et al., 2019; Govindarajan & Gupta, 1985).

7 DISCUSSION

This thesis conducts a systematic literature review of performance-based compensation literature of non-executive managers. The literature grows more and more detailed every year with increasing amount of PBC studies released every year. Regular systematic literature reviews of the findings keep the frontier of PBC research accessible. This thesis adds to the normative research base of management accounting research, as the thesis is constructed from the practical point of view to support decision-making in firms that are designing and implementing a PBC system. Additionally, this thesis tests a novel method in management accounting: a realist review, which contributes to management accounting research by introducing a new systematic literature review method.

The subjects are explored in 11 hypotheses. The 10 hypotheses regarding PBC explore 10 themes: PBC effectiveness, performance measurement, subjective performance measurement and manager discretion, perceptions of fairness, cultural differences, employee attraction and retention, contract framing, target setting, implementation, and feedback. The 11th hypothesis studies if realist review is an effective method in management accounting research. The hypotheses are formed based on the theory and the customized research framework. The framework is constructed by combining Bonner and Sprinkle's (2002) framework on PBC with Franco-Santos et al. (2012) and Ferreira and Otley's (2009) frameworks of performance measurement.

The systematic literature review is conducted on articles published in the highest valued accounting journals, including both experimental studies and empirical studies. The final sample is 82 articles that are reviewed with the realist review method. The realist review method is a systematic literature review method that aims to synthesize studies for research-based decision-making. Realist review was introduced in 1997 by Pawson and Tilley (1997) and is most commonly used in health sector studying the effectiveness of interventions. The method aims to explain causalities by presenting the context in which something is happening, the mechanism of how it is happening, why it is happening and how the mechanism and context are connected in forming the causality. In other words, realist review is a method that attempts to qualitatively explain phenomena in detail.

7.1 Results

As expected, the results of the studies in the literature review sample are not consistent. Many findings are different from each other depending on the context. However, PBC literature seems to be evolving recently. The quantity of PBC articles released is increasing while the topics are getting more and more diverse. As the understanding of the most fundamental topics, like the effectiveness of PBC and benefits of subjective evaluation, grows, there will be better opportunities for more complex topics like cultural and personal differences to evaluate the inconsistencies in the findings.

$H1_a$: Performance-based compensation is effective in increasing firm performance.

PBC is found to be effective in increasing firm performance via increased employee performance and output quality. PBC motivates the employees to perform better as well as motivates the employees to learn how to do their work better. PBC can also encourage teamwork, increase goal congruence, and alleviate agency problem. These assumptions stand in most cases where the PBC system rewards the employee for doing the actions that increase firm performance, but in cases where employee intrinsic motivation is high, and employees are very committed to the firm the PBC is less effective in increasing performance.

$H1_b$: Performance measurements need to measure and reward the employee on the dimensions that reflect the firm strategy.

If the firm measures and rewards on the dimensions that do not increase firm performance, the effect of PBC on firm performance can be zero, or even negative. The dimensions of measurement need to be carefully planned to avoid short-term focus, earnings management or misleading targets that result in suboptimal performance or gaming. Best measurements are those that cannot be manipulated and can be measured accurately, like targets based on directly measurable output or external performance targets.

$H1_c$: Subjective performance measures are usually an effective complement to objective performance measures.

Objectively measurable accurate outputs are rare in complex organizations. Subjective performance measures are considered a good complement to objective performance measures, especially when objective measures are noisy or subject to environmental shocks. Adding a subjective dimension to measurement also supports creativity and long-term focus better than only using objective measures. If the subjective evaluation is based on one manager's review, the use of subjective evaluation risks favoritism and evaluation based on inappropriate criteria. To avoid bias and prejudice in subjective evaluation, peer-reviews are usually beneficial in supporting manager evaluation. Even in situations where peer-reviews are not very effective, like when team is very heterogenous and not aware of each other's tasks, they are very rarely harmful to firm performance.

$H1_d$: The employees' perception of fairness in their performance-based compensation increases firm performance.

The employee's perception of fairness increases firm performance, and perceived unfairness decreases firm performance. Perceiving the PBC as fair increases the employee's organizational citizenship and motivation. PBC can be designed to be perceived as more fair by having technical validity, reflecting firm strategy with the targets, utilizing subjective performance measurement to complement objective measures and having an overall legitimate and fair compensation policy.

$H1_e$: Performance-based compensation has significant cultural differences in North America, Europe, and Asia.

PBC has significant cultural differences in the bonus percentages, utilization of PBC, the level of sophistication in PBC systems and the perception of PBC. There is a very wide variety of variables affecting cultural differences, likely most of which are not mentioned in this thesis' literature sample. This thesis finds that tax rates, differences in power distance and the level of cultural masculinity have an effect on PBC across different cultures. These differences might be not only caused by cultural differences

but individual differences between employees as well. For example, a more ambitious individual prefers a PBC contract while a less ambitious employee might opt out.

H1$_f$: Performance-based compensation schemes can be utilized to attract skilled employees.

Individual differences can work as the strength of PBC, as a firm offering a PBC contract might be more attractive to ambitious and highly skilled individuals compared to firms not offering PBC contracts. PBC can also act as a support to retain skilled employees when the employees can meet the performance targets and feel rewarded of their work. Notably, when using penalty contracts the employee turnover increases compared to when using bonus contracts, indicating that penalties incur unwanted costs in human capital management.

H1$_g$: Penalties extract better performance than bonuses.

Penalties extract better performance from employees than bonuses when employees consider the PBC as fair. But, penalty contracts increase risk-taking. Bonus contracts, on the contrary, are preferred by the employees and indicate trust to the employee. In some cases, presenting an option to choose between penalty and bonus contract has the same performance outcome for both bonus contract and penalty contract. When an employee has a choice, though, they tend to choose bonus contract over penalty contract if economically similar contracts are offered. In less common cases, ambitious employees prefer penalty contracts as they know they will work harder under penalty contract compared to bonus contract. Still, risk-averse firms should stick to bonus contracts as the safer option as penalty contracts increase risk-taking. Clawback contracts are beneficial in some situations where investments are high-risk, as the managers are more liable for the outcome of the investment.

H1$_h$: The more difficult the targets the better the performance.

As per goal-setting theory, more difficult targets yield better performance – up to a certain point. Goal-setting theory also establishes that targets need to be difficult but achievable, which is supported by the realist review. Target ratcheting is found to be a

harmful practice to firm performance. To maintain the benefits of PBC, target ratcheting should be avoided, and targets should be adjusted downwards if they are not achieved. Ex-post adjustments of targets can be utilized to increase the perception of fairness and pay the employees bonuses despite not meeting the ex-ante defined targets. If the target difficulty is increased, the reward should be increased to maintain the performance increase. Additionally, setting long-term targets increases long-term performance.

$H1_i$: It is beneficial to involve employees in the planning process of a new performance-based compensation system.

The collective learning and co-operative development of PBC system is beneficial, but employees are rarely aware what drives their performance. Involving employees in the development and implementation process of the PBC can clarify and communicate organizational goals. The implementation is a process that yields best results when the development is continued also after the initial release. The effects of PBC are usually not instantly observable, and it might take time before the PBC-induced performance increase can be observed.

$H1_j$: Performance feedback improves performance.

Relative performance feedback increases performance when the employee is compensated based on individual performance but decreases performance if the employee performs worse than their peers. In some cases, performance feedback has no effect at all. In other words, the sample in this thesis does not yield a generalizable statement on performance feedback and it is difficult to state if performance feedback has a performance-increasing effect when coupled with PBC.

H2: Realist review is an effective systematic literature review method for management accounting research.

The realist review is useful in the qualitative evaluation of research, to summarize the findings for practical applications. In healthcare, a realist review is used to synthesize research of the same cause-effect relationship to evaluate whether the cause-effect

relationship is sufficiently significant to be applied to practice – for example, the efficiency of a method to apply certain treatment for a certain medical condition. In business, based on this thesis, it seems that the realist review method is an effective way to synthesize research findings. Realist review is the most useful when the topic has mostly case studies, as the power of the realist review's qualitative synthesis is the most effective in those situations. The topic of this thesis was not the optimal use of realist review, however. The topic was too broad, as synthetizing information from this many separate topics with realist review yields rather general information instead of detailed descriptions of the mechanisms and contexts of the cause-effect relationship. Nonetheless, the purpose of the study was achieved as the synthesized information in a realist review can be useful for decision-making.

In conclusion, the realist review seems to be an effective method for management accounting research, but the topic and literature sample need to be carefully defined beforehand. Namely, the optimal topic would be a single cause-effect relationship and the studies in the sample would be mainly case studies.

7.2 Relevance and limitations

This thesis contributes to management accounting research by providing the frontier of performance-based compensation research. The thesis is an extension to the normative research base of management accounting as the synthesis is created to support research-based decision-making when planning to implement a PBC system. Also, the thesis contributes to management accounting research by introducing a novel systematic literature review research method: the realist review.

The sample in the study could pose limitations in how generalizable the statements are. Excluding executive and CEO compensation potentially dropped many important findings from the synthesis. Also, excluding earnings management literature could have resulted in lack of insight, especially since earnings management is a potential method for some managers to manipulate their bonuses. More importantly, the scope of the thesis is too wide. While systematically reviewing 10 different topics in a single literature review yielded useful synthesis for supporting decision-making, very few if any of the statements are detailed enough to be considered robust. The thesis should

have included only one of the topics to thoroughly explore. Nonetheless, the thesis collects the frontier of current research in PBC and forms a solid knowledge base to start exploring each of the topics in detail.

Studies in the literature review are mainly conducted in Western countries, which limits the applicability internationally. Also, even Western countries differ significantly in their cultures. Since most of the studies were conducted in North America, the findings should be treated with caution in environments and cultures that are significantly different. Finally, the literature review method is subjective and as such subject to bias from the author. There is a risk that there was bias in the selection of articles, in the interpretation and in the synthesis. Optimally, the selection of articles and the findings should be validated by an external party to avoid bias and misinterpretation.

7.3 Suggestions for further research

In future research, all the hypotheses in this study could be researched separately, each in their own systematic literature review. To truly contribute to management accounting and PBC research, each of the elements should be carefully examined in much more detail.

Most notably, the cultural differences are a significant element of PBC to examine. Many large firms opt to implement a firm-wide compensation plan regardless of cultural and regional differences. Jansen et al. (2009) argue that global best practices yield suboptimal results due to significant differences in national environments. Coram and Robinson (2017) show that the partner compensation in accounting firms is higher in Australia than in Sweden, concluding that the Swedish welfare model affects the remuneration. In Germany, the bonus percentage is usually only from 4% to 8% (Unger et al., 2020) which is significantly lower than in North America. In this thesis the studies that explicitly mention bonus percentages show that the North American bonus percentage is between 0%-165% of the fixed salary, while the highest European bonus percentage in this sample was 32%. Malmi et al. (2020) point out that while the research for cultural differences in management control is still in its early stages, the

cross-cultural variation could provide explanations for the inconsistencies in prior literature.

In the sample were very few articles regarding stock options as white-collar employee compensation, as only Chen (2003) explicitly studies employee stock options in compensation. This is a surprising finding, as one of the most prominent questions from entrepreneurs is whether they should use stock options in employee compensation plans. Some firms, like the IT Consulting firm Reaktor, prides themselves in that the firm is solely owned by its employees and that majority of employees have an ownership stake (Valtonen, 2016). There seems to be an opportunity for research in the usage of stock options in PBC for white-collar employees instead of only executives and CEOs.

This thesis does not explore task complexity as a motivating factor despite Bonner and Sprinkle (2002) presenting the factor as important, because there were no studies in the sample that contained significant findings regarding task complexity as a variable in performance-based compensation. White-collar employees operate in widely varying tasks depending on their position, which generates the question if the effectiveness of incentives depends on job-related attributes (Ikäheimo, Kallunki, Moilanen, & Schiehll, 2018). Ikäheimo et al. (2018) find that there is a significant positive association between performance-based incentives for white-collar employees and the firm future performance measured as increase in return on assets. In addition to task complexity, the organizational level of measurement matters. Kauhanen and Piekkola (2006) conclude that the closer the measured item is to the employee, the better is the motivating effect. In other words, if the measurement is done on firm level, and the employee is on a very low-level and has seemingly low effect on the outcome, the incentive system is not likely motivating. These could be explored also in a systematic literature review to define if task complexity and measurement level are significant factors in PBC.

Finally, the realist review method could be utilized more in management accounting research. It seems that the prescriptive nature of realist review could work very well with topics that are clearly defined and contain a lot of case studies and interventionist studies. Based on this thesis, the usefulness is not restricted only to the health care

sector, especially since interventionist studies are a valid and common method in management accounting research.

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Xiao, Y., & Watson, M. (2019). Guidance on conducting a systematic literature review. *Journal of Planning Education and Research, 39*(1), 93-112. doi:10.1177/0739456X17723971

APPENDICES

Appendix 1 the search formula

TITLE-ABS-KEY ("performance-based incentive*") OR TITLE-ABS-KEY ("performance-based pay") OR TITLE-ABS-KEY ("pay for performance") OR TITLE-ABS-KEY ("PBC") OR TITLE-ABS-KEY ("bonus*") OR TITLE-ABS-KEY ("performance incentive*") OR TITLE-ABS-KEY ("performance pay") OR TITLE-ABS-KEY ("performance compensation") OR TITLE-ABS-KEY ("incentive system*") OR TITLE-ABS-KEY ("incentive contract*") OR TITLE-ABS-KEY ("incentive structure*") AND (LIMIT-TO (DOCTYPE,"ar")) AND (LIMIT-TO (EXACTSRCTITLE,"Contemporary Accounting Research") OR LIMIT-TO (EXACTSRCTITLE,"Journal Of Accounting And Economics") OR LIMIT-TO (EXACTSRCTITLE,"Journal Of Accounting Research") OR LIMIT-TO (EXACTSRCTITLE,"Accounting Review") OR LIMIT-TO (EXACTSRCTITLE,"European Accounting Review") OR LIMIT-TO (EXACTSRCTITLE,"Journal Of Accounting And Public Policy") OR LIMIT-TO (EXACTSRCTITLE,"Journal Of International Accounting Auditing And Taxation") OR LIMIT-TO (EXACTSRCTITLE,"Management Accounting Research") OR LIMIT-TO (EXACTSRCTITLE,"Review Of Accounting Studies") OR LIMIT-TO (EXACTSRCTITLE,"Accounting And Business Research") OR LIMIT-TO (EXACTSRCTITLE,"Journal Of Accounting Auditing And Finance") OR LIMIT-TO (EXACTSRCTITLE,"Journal Of Business Finance And Accounting") OR LIMIT-TO (EXACTSRCTITLE,"Accounting Organizations And Society") OR LIMIT-TO (EXACTSRCTITLE,"International Journal Of Accounting") OR LIMIT-TO (EXACTSRCTITLE,"Abacus") OR LIMIT-TO (EXACTSRCTITLE,"British Accounting Review") OR LIMIT-TO (EXACTSRCTITLE,"Accounting Auditing Accountability Journal") OR LIMIT-TO (EXACTSRCTITLE,"Accounting Auditing And Accountability Journal") OR LIMIT-TO (EXACTSRCTITLE,"Accounting Horizons") OR LIMIT-TO (EXACTSRCTITLE,"Critical Perspectives On Accounting") OR LIMIT-TO (EXACTSRCTITLE,"Behavioral Research In Accounting") OR LIMIT-TO (EXACTSRCTITLE,"Journal Of Accounting Literature") OR LIMIT-TO (EXACTSRCTITLE,"Accounting Forum"))

Appendix 2 list of the included literature review articles

References	Sample qty	Sample	Study type	Time	Sample Origin	Bonus percentage	Note	Area
Abernethy, M. A., Dekker, H. C., & Schulz, A. K. -. (2015). Are employee selection and incentive contracts complements or substitutes? Journal of Accounting Research, 53(4), 633-668. doi:10.1111/1475-679X.12090	184	Senior Managers of Manufacturing Business Units	Quantitative	2013	Kompass Australia Database	15% (mean)	Employee-level data	Oceania
Abul-Ezz, M. E. (1993). Incentive structure and group performance expectations in a budgeting setting: A descriptive study. Accounting, Auditing & Accountability Journal, 6(2), 17-31. doi:10.1108/09513579310036350	90	University Students	Experimental					North America
Ahn, T. S., Hwang, I., & Kim, M. -. (2010). The impact of performance measure discriminability on ratee incentives. Accounting Review, 85(2), 389-417. doi:10.2308/accr.2010.85.2.389	13	Performance-evaluation systems of public enterprises in South Korea	Quantitative	1990-2006	South Korean Government-invested companies (more than 50% ownership)	no data	Company-level data	Asia
Akinyele, K. O., Arnold, V., & Sutton, S. G. (2020). Wording and saliency matter: The impact of incentive system and organizational value statement on employees' performance. Behavioral Research in Accounting, 32(1), 101-118. doi:10.2308/bria-18-035	88	University Students	Experimental					North America
Anderson, S. W., Dekker, H. C., Sedatole, K. L., & Wiersma, E. (2020). When one size does not fit all: Using ex post subjective ratings to provide parity in risk-adjusted compensation. Management Accounting Research, 49 doi:10.1016/j.mar.2020.100706	74	Retail stores of a large US specialty retailer	Quantitative	10 quarters between 2010-2020	Large US retail company	1%-23%	Branch level data	North America
Aranda, C., Arellano, J., & Davila, A. (2019). Subjective bonuses and target setting in budget-based incentive contracts. Management Accounting Research, 43, 45-60. doi:10.1016/j.mar.2018.07.003	390	Branches of a large european travel agency	Quantitative	2003-2006	Large european travel agency	10%-20%	Branch level data	Europe
Arnold, M. C., & Tafkov, I. D. (2019). Managerial discretion and task interdependence in teams. Contemporary Accounting Research, 36(4), 2467-2493. doi:10.1111/1911-3846.12504	188	University Students	Experimental					North America

Arnold, M. C., Hannan, R. L., & Tafkov, I. D. (2018). Team member subjective communication in homogeneous and heterogeneous teams. Accounting Review, 93(5), 1-22. doi:10.2308/accr-52002	148	University Students	Experimental					North America
Bailey, W. J., Hecht, G., & Towry, K. L. (2011). Dividing the pie: The influence of managerial discretion extent on bonus pool allocation. Contemporary Accounting Research, 28(5), 1562-1584. doi:10.1111/j.1911-3846.2011.01073.x	170	University Students	Experimental					North America
Banker, R. D., Lee, S. -., & Potter, G. (1996). A field study of the impact of a performance-based incentive plan. Journal of Accounting and Economics, 21(2), 195-226. doi:10.1016/0165-4101(95)00418-1	34	Retail stores of a US retail company	Quantitative	1987-1991	Fortune 500 US Retail Company Division	20% (average)	Branch level data	North America
Banker, R. D., Lee, S. -., Potter, G., & Srinivasan, D. (2000). An empirical analysis of continuing improvements following the implementation of a performance-based compensation plan. Journal of Accounting and Economics, 30(3), 315-350. doi:10.1016/S0165-4101(01)00016-7	3776	Sales employees of a US retail company (from 10 stores)	Quantitative	1989-1992	Fortune 500 US Retail Company Division	20% (average)	Employee-level data	North America
Banker, R. D., Potter, G., & Srinivasan, D. (2000). An empirical investigation of an incentive plan that includes nonfinancial performance measures. Accounting Review, 75(1), 65-92. doi:10.2308/accr.2000.75.1.65	18	Hotels in a US Hotel franchise	Quantitative	1991-1996	Hotel Franchise in the US	30%-70%	Branch level data	North America
Bol, J. C., & Lill, J. B. (2015). Performance target revisions in incentive contracts: Do information and trust reduce ratcheting and the ratchet effect? Accounting Review, 90(5), 1755-1778. doi:10.2308/accr-51050	95	Local banks part of a large European COOP bank	Mixed	1999-2004	Large European COOP Bank	0%-25%	Branch level data	Europe
Bol, J. C., & Moers, F. (2010). The dynamics of incentive contracting: The role of learning in the diffusion process. Accounting, Organizations and Society, 35(8), 721-736. doi:10.1016/j.aos.2010.09.003	76	Local banks part of a large European COOP bank	Quantitative	1999-2004	Large European COOP Bank	0%-25%	Branch level data	Europe
Bol, J. C., Estep, C., Moers, F., & Peecher, M. E. (2018). The role of tacit knowledge in auditor expertise and human capital development. Journal of Accounting Research, 56(4), 1205-1252. doi:10.1111/1475-679X.12220	123	31 Recent graduates in US audit firms and 92 employees in Dutch mid-sized Audit firm	Mixed	2016	Qualtrics in the US and a Dutch audit firm	0%-10%	Employee-level data	Western
Bol, J. C., Hecht, G., & Smith, S. D. (2015). Managers' discretionary adjustments: The influence of uncontrollable events and compensation interdependence. Contemporary Accounting Research, 32(1), 139-159. doi:10.1111/1911-3846.12070	97	University Students	Experimental					North America

Bouwens, J., & Van Lent, L. (2007). Assessing the performance of business unit managers. Journal of Accounting Research, 45(4), 667-697. doi:10.1111/j.1475-679X.2007.00251.x	140	Business Unit Managers in Dutch firms with average of 240 employees	Quantitative	2005	Database of firms in the Netherlands	no data	Employee-level data	Europe
Brink, A. G., & Rankin, F. W. (2013). The effects of risk preference and loss aversion on individual behavior under bonus, penalty, and combined contract frames. Behavioral Research in Accounting, 25(2), 145-170. doi:10.2308/bria-50408	156	University Students	Experimental					North America
Brown, J. L., Farrington, S., & Sprinkle, G. B. (2016). Biased self-assessments, feedback, and employees' compensation plan choices. Accounting, Organizations and Society, 54, 45-59. doi:10.1016/j.aos.2016.08.003	148	University Students	Experimental					North America
Burney, L. L., Henle, C. A., & Widener, S. K. (2009). A path model examining the relations among strategic performance measurement system characteristics, organizational justice, and extra- and in-role performance. Accounting, Organizations and Society, 34(3-4), 305-321. doi:10.1016/j.aos.2008.11.002	242	Employees in 47 branches of a US financial services organization	Quantitative	2007	Southeastern US financial services organization	0-50%	Employee-level data	North America
Cardinaels, E., & Yin, H. (2015). Think twice before going for incentives: Social norms and the principal's decision on compensation contracts. Journal of Accounting Research, 53(5), 985-1015. doi:10.1111/1475-679X.12093	128	University Students	Experimental		Tilburg University			Europe
Casas-Arce, P., Holzhacker, M., Mahlendorf, M. D., & Matějka, M. (2018). Relative performance evaluation and the ratchet effect. Contemporary Accounting Research, 35(4), 1702-1731. doi:10.1111/1911-3846.12385	354	Service units in an employment agency under governmental department of labor employing over 100 000 employees	Quantitative	2007-2010	Governmental Agency in a European country	no data	Branch level data	Europe
Chen, C. -. (2003). Investment opportunities and the relation between equity value and employees' bonus. Journal of Business Finance and Accounting, 30(7-8), 941-974. doi:10.1111/1468-5957.05346	1402	Nonfinancial firms listed in Taiwan Stock Exchange	Quantitative	1996-1999	Taiwanese listed firms	25% (mean)	Company-level data	Asia
Chen, C. X., Rennekamp, K. M., & Zhou, F. H. (2015). The effects of forecast type and performance-based incentives on the quality of management forecasts. Accounting, Organizations and Society, 46, 8-18. doi:10.1016/j.aos.2015.03.002	92	University Students	Experimental					North America
Cheng, M. M., Dinh, T., Schultze, W., & Assel, M. (2019). The effect of bonus deferral on managers' investment decisions. Behavioral Research in Accounting, 31(2), 31-49. doi:10.2308/bria-52463	167	University Students	Experimental					Europe

Choi, J. (2014). Can offering a signing bonus motivate effort? experimental evidence of the moderating effects of labor market competition. Accounting Review, 89(2), 545-570. doi:10.2308/accr-50641	201	University Students	Experimental					North America
Christ, M. H., & Vance, T. W. (2018). Cascading controls: The effects of managers' incentives on subordinate effort to help or harm. Accounting, Organizations and Society, 65, 20-32. doi:10.1016/j.aos.2017.10.003	323	US-located participants	Experimental		US Amazon Mechanical Turk			North America
Christ, M. H., Sedatole, K. L., & Towry, K. L. (2012). Sticks and carrots: The effect of contract frame on effort in incomplete contracts. Accounting Review, 87(6), 1913-1938. doi:10.2308/accr-50219	220	University Students	Experimental					North America
Cianci, A. M., Kaplan, S. E., & Samuels, J. A. (2013). The moderating effects of the incentive system and performance measure on managers' and their superiors' expectations about the manager's effort. Behavioral Research in Accounting, 25(1), 115-134. doi:10.2308/bria-50290	77	University Students	Experimental					North America
Coram, P. J., & Robinson, M. J. (2017). Professionalism and performance incentives in accounting firms. Accounting Horizons, 31(1), 103-123. doi:10.2308/acch-51636	9	Partners in Big4 and mid-tier Accounting firms in Australia	Qualitative	2015	Australian Big4 and mid-tier accounting firms	no data	Employee-level data	Oceania
Drake, A. R., Haka, S. F., & Ravenscroft, S. P. (1999). Cost system and incentive structure effects on innovation, efficiency and profitability in teams. Accounting Review, 74(3), 323-345. doi:10.2308/accr.1999.74.3.323	132	University Students	Experimental					North America
Ederhof, M. (2011). Incentive compensation and promotion-based incentives of mid-level managers: Evidence from a multinational corporation. Accounting Review, 86(1), 131-153. doi:10.2308/accr.00000007	1151	Managers from a multinational engineering corporation	Quantitative	2009	Large engineering MNE, data from 14 Countries, mainly Western	no data	Branch level data	International
Eldenburg, L. G., Gaertner, F. B., & Goodman, T. H. (2015). The influence of ownership and compensation practices on charitable activities. Contemporary Accounting Research, 32(1), 169-192. doi:10.1111/1911-3846.12066	177	Hospitals in California totaling 1594 Hospital-years	Quantitative	1996-2006	California Office of Statewide Health Planning and Development	no data	Company-level data	North America
Farrell, A. M., Kadous, K., & Towry, K. L. (2008). Contracting on contemporaneous versus forward-looking measures: An experimental investigation. Contemporary Accounting Research, 25(3), 773-802. doi:10.1506/car.25.3.5	80	University Students	Experimental					North America

Fehrenbacher, D. D., Kaplan, S. E., & Pedell, B. (2017). The relation between individual characteristics and compensation contract selection. Management Accounting Research, 34, 1-18. doi:10.1016/j.mar.2016.06.001	159	University Students	Experimental					Europe
Friis, I., Hansen, A., & Vámosi, T. (2015). On the effectiveness of incentive pay: Exploring complementarities and substitution between management control system elements in a manufacturing firm. European Accounting Review, 24(2), 241-276. doi:10.1080/09638180.2014.976055	27	Employees and Managers in a Danish division of a German parent company producing and designing diesel-generators.	Qualitative	2011	Danish design and manufacturing division of a MNE	no data	Employee-level data	Europe
Gibbs, M., Merchant, K. A., Van Der Stede, W. A., & Vargus, M. E. (2004). Determinants and effects of subjectivity in incentives. Accounting Review, 79(2), 409-436. doi:10.2308/accr.2004.79.2.409	526	Department managers of 250 car dealerships in the US	Quantitative	1998	US Car dealerships	40%	Employee-level data	North America
Gonzalez, G. C., Hoffman, V. B., & Moser, D. V. (2020). Do effort differences between bonus and penalty contracts persist in labor markets? Accounting Review, 95(3), 205-222. doi:10.2308/ACCR-52655	100	University Students and University Personnel	Experimental					North America
Govindarajan, V., & Gupta, A. K. (1985). Linking control systems to business unit strategy: Impact on performance. Accounting, Organizations and Society, 10(1), 51-66. doi:10.1016/0361-3682(85)90031-5	46	General Managers of Strategic Business Units in 8 Fortune 500 firms in the US	Quantitative	1981	8 Fortune 500 firms in the US	39%	Employee-level data	North America
Grabner, I. (2014). Incentive system design in creativity-dependent firms. Accounting Review, 89(5), 1729-1750. doi:10.2308/accr-50756	457	Managing directors of medium-sized, single-line-of-business firms in all industries in Austria, Germany and Switzerland, excluding some creative firms	Quantitative	2012	Amadeus database including Austrian, German and Swiss mid-sized firms	no data	Employee-level data	Europe
Grabner, I., & Martin, M. A. (2021). The effect of horizontal pay dispersion on the effectiveness of performance-based incentives. Accounting, Organizations and Society, 88 doi:10.1016/j.aos.2020.101174	1595	Service providers with 27680 service provider-month observations in 285 (of total 450) operating units in a large US healthcare firm	Quantitative	2006-2010	Large US healthcare firm	40%	Employee-level data	North America
Haesebrouck, K., Cools, M., & Van Den Abbeele, A. (2018). Status differences and knowledge transfer: The effect of incentives. Accounting Review, 93(1), 213-234. doi:10.2308/accr-51765	168	University Students	Experimental					Europe
Haesebrouck, K., Van den Abbeele, A., & Williamson, M. G. (2021). Building trust through knowledge sharing: Implications for	168	University Students	Experimental					Europe

incentive system design. Accounting, Organizations and Society, doi:10.1016/j.aos.2021.101241								
Hannan, R. L., Krishnan, R., & Newman, A. H. (2008). The effects of disseminating relative performance feedback in tournament and individual performance compensation plans. Accounting Review, 83(4), 893-913. doi:10.2308/accr.2008.83.4.893	134	University Students	Experimental					North America
Hartmann, F., & Schreck, P. (2018). Rankings, performance, and sabotage: The moderating effects of target setting. European Accounting Review, 27(2), 363-382. doi:10.1080/09638180.2016.1244015	120	University Students	Experimental					Europe
Hirsch, B., Reichert, B. E., & Sohn, M. (2017). The impact of clawback provisions on information processing and investment behaviour. Management Accounting Research, 37, 1-11. doi:10.1016/j.mar.2016.12.001	89	University Students	Experimental					Western
Huang, J., Balakrishnan, R., & Pan, F. (2021). Properties of performance measures and the demand for discretion in incentive contracts. Journal of Accounting, Auditing and Finance, 36(2), 353-378. doi:10.1177/0148558X19846738	179	Profit center managers in 56 Chinese firms	Quantitative	2015	Chinese companies with ties to the researchers & their colleagues	77%	Employee-level data	Asia
Huang, R., Marquardt, C. A., & Zhang, B. (2014). Why do managers avoid EPS dilution? evidence from debt-equity choice. Review of Accounting Studies, 19(2), 877-912. doi:10.1007/s11142-013-9266-3	1493	Firm years from firms with total assets over 10 million USD excluding financial industries	Quantitative	1993-2005	Compustat US companies	no data	Company-level data	North America
Hwang, Y., Erkens, D. H., & Evans III, J. H. (2009). Knowledge sharing and incentive design in production environments: Theory and evidence. Accounting Review, 84(4), 1145-1170. doi:10.2308/accr.2009.84.4.1145	1780	Observations from managers in manufacturing plants, larger than 100 employees	Quantitative	2000	4th Annual IndustryWeek Census of Manufacturers Survey	no data	Employee-level data	North America
Indjejikian, R. J., Matějka, M., Merchant, K. A., & Van Der Stede, W. A. (2014). Earnings targets and annual bonus incentives. Accounting Review, 89(4), 1227-1258. doi:10.2308/accr-50732	666	Entities of certified accountants in high level corporate or business-unit positions	Quantitative	2009	AICPA member survey in the US	17%	Employee-level data	North America
Ittner, C. D., Larcker, D. F., & Meyer, M. W. (2003). Subjectivity and the weighting of performance measures: Evidence from a balanced scorecard. Accounting Review, 78(3), 725-758. doi:10.2308/accr.2003.78.3.725	95	Branches of a retail bank in North America	Quantitative	1995-1998	GFS, A retail bank in North America	0-53%	Branch level data	North America
Ittner, C. D., Larcker, D. F., & Pizzini, M. (2007). Performance-based compensation in member-owned firms: An examination of	9851	Physicians in 596 medical group practices in the US	Quantitative	1999	MGMA survey in the US	0-100%	Employee-level data	North America

medical group practices. Journal of Accounting and Economics, 44(3), 300-327. doi:10.1016/j.jacceco.2007.05.001								
Jansen, E. P., Merchant, K. A., & Van der Stede, W. A. (2009). National differences in incentive compensation practices: The differing roles of financial performance measurement in the united states and the netherlands. Accounting, Organizations and Society, 34(1), 58-84. doi:10.1016/j.aos.2008.05.002	846	Department managers and general managers of 320 Dutch car dealerships and 250 car dealerships in the US	Quantitative	1998, 2001-2003	US and Dutch car dealerships	1%-3%(NL) 43%-54%(US)	Employee-level data	Europe
Ke, B., Rui, O., & Yu, W. (2012). Hong kong stock listing and the sensitivity of managerial compensation to firm performance in state-controlled chinese firms. Review of Accounting Studies, 17(1), 166-188. doi:10.1007/s11142-011-9169-0	231	Chinese state-controlled firms (top15% of A shares + H and Red Chip shares)	Quantitative	2003-2006	Chinese state-controlled firms	no data	Company-level data	Asia
Kluvers, R., & Tippett, J. (2011). An exploration of stewardship theory in a not-for-profit organisation. Accounting Forum, 35(4), 275-284. doi:10.1016/j.accfor.2011.04.002	60	Employees in an Australian government-funded non-profit	Qualitative	2010	Australian not-for-profit	no data	Employee-level data	Oceania
Knauer, T., Sommer, F., & Wöhrmann, A. (2017). Tournament winner proportion and its effect on effort: An investigation of the underlying psychological mechanisms. European Accounting Review, 26(4), 681-702. doi:10.1080/09638180.2016.1175957	90	University Students	Experimental					Europe
Kuang, X. J., & Moser, D. V. (2011). Wage negotiation, employee effort, and firm profit under output-based versus fixed-wage incentive contracts. Contemporary Accounting Research, 28(2), 616-642. doi:10.1111/j.1911-3846.2010.01050.x	80	University Students	Experimental					North America
Lambert, R. A., & Larcker, D. F. (1995). The prospective payment system, hospital efficiency, and compensation contracts for senior-level hospital administrators. Journal of Accounting and Public Policy, 14(1), 1-31. doi:10.1016/0278-4254(94)00022-S	1078	Hospitals in all US states, District of Columbia and Puerto Rico	Quantitative	1983, 1986, 1987	Annual Survey of Hospitals (83, 86), special survey to the Hospitals (87)	0%-56%	Branch level data	North America
Libby, T., & Thorne, L. (2009). The influence of incentive structure on group performance in assembly lines and teams. Behavioral Research in Accounting, 21(2), 57-72. doi:10.2308/bria.2009.21.2.57	198	University Students	Experimental					North America
Liu, X. K., & Zhang, Y. M. (2015). Effects of target timing and contract frame on individual performance. European Accounting Review, 24(2), 329-345. doi:10.1080/09638180.2014.942337	65	University Students	Experimental					North America
Lourenço, S. M. (2020). Do self-reported motivators really motivate higher performance? Management Accounting Research, 47 doi:10.1016/j.mar.2019.100676	119	Sales reps working for an assisted sales division of a retail services company in a	Quantitative	2016	Sales division of an US retail services company	5%	Employee-level data	North America

		controlled field experiment in the US						
Luft, J. (1994). Bonus and penalty incentives contract choice by employees. Journal of Accounting and Economics, 18(2), 181-206. doi:10.1016/0165-4101(94)00361-0	27	University Students	Experimental					North America
Maas, V. S., Van Rinsum, M., & Towry, K. L. (2012). In search of informed discretion: An experimental investigation of fairness and trust reciprocity. Accounting Review, 87(2), 617-644. doi:10.2308/accr-10205	126	University Students	Experimental					Europe
Maske, M. K., Sohn, M., & Hirsch, B. (2021). How managerial accountability mitigates a halo effect in managers' ex-post bonus adjustments. Management Accounting Research, 51 doi:10.1016/j.mar.2021.100738	163	University Students	Experimental					Europe
Matějka, M., & Ray, K. (2017). Balancing difficulty of performance targets: Theory and evidence. Review of Accounting Studies, 22(4), 1666-1697. doi:10.1007/s11142-017-9420-4	877	Entities of certified accountants in high level corporate or business-unit positions	Quantitative	2013	AICPA member survey in the US	22%-48%	Employee-level data	North America
Merchant, K. A., & Riccaboni, A. (1990). Performance-based management incentives at the fiat group: A field study. Management Accounting Research, 1(4), 281-303. doi:10.1016/S1044-5005(90)70063-7	19	Managers at FIAT Italy	Qualitative	1981-1989	FIAT Italy	30%-32%	Employee-level data	Europe
Merchant, K. A., van der Stede, W. A., Lin, T. W., & Yu, Z. (2011). Performance measurement and incentive compensation: An empirical analysis and comparison of chinese and Western firms' practices. European Accounting Review, 20(4), 639-667. doi:10.1080/09638180.2011.593293	1105	Department managers and general managers of 320 Dutch car dealerships and 250 car dealerships in the US and 300 car dealerships in China	Quantitative	2009	US, Dutch and Chinese car dealerships	1%-3%(NL) 43%-54%(US) 21%-33% (China)	Employee-level data	Western
Murphy, K. J. (2000). Performance standards in incentive contracts. Journal of Accounting and Economics, 30(3), 245-278. doi:10.1016/S0165-4101(01)00013-1	177	US listed corporations	Quantitative	1992-1997	Compustat ExecuComp US listed companies & The Towers Perrin study	165%	Company-level data	North America
Naranjo-Gil, D., Cuevas-Rodríguez, G., López-Cabrales, A., & Sánchez, J. M. (2012). The effects of incentive system and cognitive orientation on teams' performance. Behavioral Research in Accounting, 24(2), 177-191. doi:10.2308/bria-50098	184	University Students	Experimental					Europe
Oblak, K., Ličen, M., & Slapničar, S. (2018). The role of cognitive frames in combined decisions about risk and effort. Management Accounting Research, 39, 35-46. doi:10.1016/j.mar.2017.07.001	100	University Students	Experimental					Europe

Riceman, S., Cahan, S., & Lal, M. (2002). Do managers perform better under EVA bonus schemes? European Accounting Review, 11(3), 537-572. doi:10.1080/0963818022000000984	117	Mid-level managers from cross-section of functional areas	Quantitative	2000	Major international company in New Zealand	no data	Employee-level data	Oceania
Román, F. J. (2009). An analysis of changes to a team-based incentive plan and its effects on productivity, product quality, and absenteeism. Accounting, Organizations and Society, 34(5), 589-618. doi:10.1016/j.aos.2008.08.004	3	Production units (with total of 147 observations, 49 each) in non-unionized large manufacturing facility, a division of F500 company	Quantitative	1999-2003	A division in US Fortune 500 company	0-10%	Branch level data	North America
Schedlinsky, I., Schmidt, M., & Wöhrmann, A. (2020). Interaction of information and control systems: How the perception of behavior control affects the motivational effect of relative performance information. Accounting, Organizations and Society, 86 doi:10.1016/j.aos.2020.101171	115	University Students	Experimental					Europe
Sprinkle, G. B. (2000). The effect of incentive contracts on learning and performance. Accounting Review, 75(3), 299-326. doi:10.2308/accr.2000.75.3.299	40	University Students	Experimental					North America
Tuomela, T. -. (2005). The interplay of different levers of control: A case study of introducing a new performance measurement system. Management Accounting Research, 16(3 SPEC. ISS.), 293-320. doi:10.1016/j.mar.2005.06.003	4	Semi-structured interviews and significant participation in an invervention in the case company	Qualitative	1996-2000	ABB Finland	no data	Employee-level data	Europe
Unger, O., Szczesny, A., & Holderried, M. (2020). Does performance pay increase productivity? evidence from a medical typing unit. Management Accounting Research, 47 doi:10.1016/j.mar.2019.100649	21	Employees in a medical typing unit	Quantitative	2011-2014	Central Medical Typing Unit of 2 Clinics in Germany	4%-7%	Employee-level data	Europe
Upton, D. R., & Arrington, C. E. (2012). Implicit racial prejudice against african-americans in balanced scorecard performance evaluations. Critical Perspectives on Accounting, 23(4-5), 281-297. doi:10.1016/j.cpa.2012.01.002	51	University Students	Experimental					North America
Van der Stede, W. A. (2003). The effect of national culture on management control and incentive system design in multi-business firms: Evidence of intracorporate isomorphism. European Accounting Review, 12(2), 263-285. doi:10.1080/0963818022000009859	153	Business unit observations from Belgian independent companies with sales over 75 million EUR	Quantitative	1996	National Bank of Belgium files on Belgian companies	13%	Branch level data	Europe
van der Stede, W. A., Wu, A., & Wu, S. Y. -. (2020). An empirical analysis of employee responses to bonuses and penalties. Accounting Review, 95(6), 395-412. doi:10.2308/TAR-2017-0141	543	Employees at a leading manufacturer of	Quantitative	2008-2010	Chinese electronics manufacturing plant	-53%-72%	Employee-level data	Asia

		electromagnetic interference components in China						
Voußem, L., Kramer, S., & Schäffer, U. (2016). Fairness perceptions of annual bonus payments: The effects of subjective performance measures and the achievement of bonus targets. Management Accounting Research, 30, 32-46. doi:10.1016/j.mar.2015.10.001	156	Members of a finance function in German, Austrian and Swiss companies	Quantitative	2011	Survey to a Panel of Controllers in Germany, Austria and Switzerland	16%	Employee-level data	Europe
Widener, S. K. (2006). Human capital, pay structure, and the use of performance measures in bonus compensation. Management Accounting Research, 17(2), 198-221. doi:10.1016/j.mar.2005.06.001	177	US Firms with more than 250 employees	Quantitative	1997	Compustat US companies	no data	Company-level data	North America
Woods, A. (2012). Subjective adjustments to objective performance measures: The influence of prior performance. Accounting, Organizations and Society, 37(6), 403-425. doi:10.1016/j.aos.2012.06.001	66	Managers, supervisors and division managers in a large international audit organization	Quantitative	2004-2007	Large international audit organization	0-8%	Employee-level data	International

Appendix 3 list of rejected literature review articles

References	Reason for exclusion
ABDEL-KHALIK, A. R., CHI, C., & GHICAS, D. (1987). Rationality of executive compensation schemes and real accounting changes. Contemporary Accounting Research, 4(1), 32-60. doi:10.1111/j.1911-3846.1987.tb00654.x	Not related: Earnings mgmt
Abernethy, M. A., Bouwens, J., & Kroos, P. (2017). Organization identity and earnings manipulation. Accounting, Organizations and Society, 58, 1-14. doi:10.1016/j.aos.2017.04.002	Not related: Earnings mgmt
Abernethy, M. A., Kuang, Y. F., & Qin, B. (2015). The influence of CEO power on compensation contract design. Accounting Review, 90(4), 1265-1306. doi:10.2308/accr-50971	Not related: CEO/Exec
Abeysekera, S. P. (2001). Efficient markets hypothesis and the emerging capital market in sri lanka: Evidence from the colombo stock exchange - A note. Journal of Business Finance and Accounting, 28(1-2), 249-261. doi:10.1111/1468-5957.00373	Not related: Other
Aboody, D., & Kasznik, R. (2008). Executive stock-based compensation and firms' cash payout: The role of shareholders' tax-related payout preferences. Review of Accounting Studies, 13(2-3), 216-251. doi:10.1007/s11142-008-9068-1	Not related: CEO/Exec
Adaoglu, C., & Lasfer, M. (2011). Why do companies pay stock dividends? the case of bonus distributions in an inflationary environment. Journal of Business Finance and Accounting, 38(5-6), 601-627. doi:10.1111/j.1468-5957.2011.02233.x	Not related: Other
Adut, D., Holder, A. D., & Robin, A. (2013). Predictive versus opportunistic earnings management, executive compensation, and firm performance. Journal of Accounting and Public Policy, 32(3), 126-146. doi:10.1016/j.jaccpubpol.2013.02.007	Not related: Earnings mgmt
Aggarwal, R. K., Evans, M. E., & Nanda, D. (2012). Nonprofit boards: Size, performance and managerial incentives. Journal of Accounting and Economics, 53(1-2), 466-487. doi:10.1016/j.jacceco.2011.08.001	Not related: CEO/Exec
Alles, M., & Datar, S. (2002). Control implications of worker identification with firm sales success. Management Accounting Research, 13(2), 173-190. doi:10.1006/mare.2002.0185	Not empirical study
Al-Shaer, H., & Harakeh, M. (2020). Gender differences in executive compensation on british corporate boards: The role of conditional conservatism. International Journal of Accounting, doi:10.1142/S109440602050002X	Not related: CEO/Exec
Andrew Tzelung, Y. I. M. (2001). Renegotiation and relative performance evaluation: Why an informative signal may be useless. Review of Accounting Studies, 6(1), 77-108. doi:10.1023/a:1011386104784	Not empirical study
Armstrong, C., Blackburne, T., & Quinn, P. (2021). Are CEOs' purchases more profitable than they appear? Journal of Accounting and Economics, 71(2-3) doi:10.1016/j.jacceco.2020.101378	Not related: CEO/Exec
Armstrong, P. (1991). Contradiction and social dynamics in the capitalist agency relationship. Accounting, Organizations and Society, 16(1), 1-25. doi:10.1016/0361-3682(91)90030-I	Not empirical study
Arya, A., Fellingham, J., & Glover, J. (1997). Teams, repeated tasks, and implicit incentives. Journal of Accounting and Economics, 23(1), 7-30. doi:10.1016/S0165-4101(96)00446-6	Not empirical study

Arya, A., Fellingham, J., Frimor, H., & Mittendorf, B. (2006). On the role of receivables in managing salesforce incentives. European Accounting Review, 15(3), 311-324. doi:10.1080/09638180600916226	Not empirical study
Autrey, R. L., Dikolli, S. S., & Paul Newman, D. (2007). Career concerns and mandated disclosure. Journal of Accounting and Public Policy, 26(5), 527-554. doi:10.1016/j.jaccpubpol.2007.08.002	Not related: CEO/Exec
Azofra, V., Prieto, B., & Santidrián, A. (2003). The usefulness of a performance measurement system in the daily life of an organisation: A note on a case study. British Accounting Review, 35(4), 367-384. doi:10.1016/S0890-8389(03)00058-1	Not empirical study
Bachmann, R. L., Loyeung, A., Matolcsy, Z. P., & Spiropoulos, H. (2020). Powerful CEOs, cash bonus contracts and firm performance. Journal of Business Finance and Accounting, 47(1-2), 100-131. doi:10.1111/jbfa.12410	Not related: CEO/Exec
Baik, Y. -., Kwak, B., & Lee, J. (2011). Deregulation and earnings management: The case of the U.S. airline industry. Journal of Accounting and Public Policy, 30(6), 589-606. doi:10.1016/j.jaccpubpol.2011.08.006	Not related: Earnings mgmt
Baiman, S., Fischer, P., Rajan, M. V., & Saouma, R. (2007). Resource allocation auctions within firms. Journal of Accounting Research, 45(5), 915-946. doi:10.1111/j.1475-679X.2007.00255.x	Not empirical study
BALAKRISHNAN, R., & DeJONG, D. V. (1993). The role of cost allocations in the acquisition and use of common resources. Contemporary Accounting Research, 9(2), 395-414. doi:10.1111/j.1911-3846.1993.tb00888.x	Not related: Other
Baldenius, T., & Michaeli, B. (2019). Integrated ownership and managerial incentives with endogenous project risk. Review of Accounting Studies, 24(4), 1450-1485. doi:10.1007/s11142-019-09504-0	Not empirical study
Baldenius, T., & Michaeli, B. (2020). Responsibility centers, decision rights, and synergies. Accounting Review, 95(2), 1-29. doi:10.2308/accr-52499	Not empirical study
Baldenius, T., Glover, J., & Xue, H. (2016). Relational contracts with and between agents. Journal of Accounting and Economics, 61(2-3), 369-390. doi:10.1016/j.jacceco.2016.01.002	Not empirical study
Balsam, S., & Harris, E. E. (2018). Nonprofit executive incentive pay. Review of Accounting Studies, 23(4), 1665-1714. doi:10.1007/s11142-018-9473-z	Not related: CEO/Exec
Balsam, S., & Ryan, D. H. (2007). Limiting executive compensation: The case of CEOs hired after the imposition of 162(m). Journal of Accounting, Auditing and Finance, 22(4), 599-621. doi:10.1177/0148558X0702200406	Not related: CEO/Exec
Balsam, S., Irani, A. J., & Yin, Q. J. (2012). Impact of job complexity and performance on CFO compensation. Accounting Horizons, 26(3), 395-416. doi:10.2308/acch-50184	Not related: CEO/Exec
BANKER, R. D., DATAR, S. M., & MAZUR, M. J. (1990). Testing the optimality of a performance evaluation measure for a gainsharing contract. Contemporary Accounting Research, 6(2), 809-824. doi:10.1111/j.1911-3846.1990.tb00788.x	Not empirical study
Banker, R. D., Huang, R., & Natarajan, R. (2009). Incentive contracting and value relevance of earnings and cash flows. Journal of Accounting Research, 47(3), 647-678. doi:10.1111/j.1475-679X.2009.00335.x	Not related: Other
Barsky, N. P., Hussein, M. E., & Jablonsky, S. F. (1999). Shareholder and stakeholder value in corporate downsizing – the case of united technologies corporation. Accounting, Auditing & Accountability Journal, 12(5), 583-604. doi:10.1108/09513579910298480	Not related: Other
BAZLEY, M., BROWN, P., & IZAN, H. Y. (1985). An analysis of lease disclosures by australian companies. Abacus, 21(1), 44-62. doi:10.1111/j.1467-6281.1985.tb00111.x	Not related: Other

Beatty, A., & Weber, J. (2006). Accounting discretion in fair value estimates: An examination of SFAS 142 goodwill impairments. Journal of Accounting Research, 44(2), 257-288. doi:10.1111/j.1475-679X.2006.00200.x	Not related: Other
Beaudoin, C. A., Dang, L., Fang, Q., & Tsakumis, G. T. (2012). The agency problem and the moderating role of culturally based management style on chinese managers' discretionary accruals. Journal of International Accounting, Auditing and Taxation, 21(2), 145-155. doi:10.1016/j.intaccaudtax.2012.07.004	Not related: Earnings mgmt
Bertomeu, J. (2015). Incentive contracts, market risk, and cost of capital. Contemporary Accounting Research, 32(4), 1337-1352. doi:10.1111/1911-3846.12130	Not empirical study
Bertomeu, J., Darrough, M., & Xue, W. (2017). Optimal conservatism with earnings manipulation. [Prudence optimale et manipulation des résultats] Contemporary Accounting Research, 34(1), 252-284. doi:10.1111/1911-3846.12247	Not related: Earnings mgmt
Billings, B. K., Moon, J. R., Morton, R. M., & Wallace, D. M. (2020). Can employee stock options contribute to less risk-taking? Contemporary Accounting Research, 37(3), 1658-1686. doi:10.1111/1911-3846.12562	Not related: CEO/Exec
Blacconierea, W. G., Johnson, M. F., & Lewis, M. F. (2008). The role of tax regulation and compensation contracts in the decision to voluntarily expense employee stock options. Journal of Accounting and Economics, 46(1), 101-111. doi:10.1016/j.jacceco.2007.11.003	Not related: CEO/Exec
Black, D. E., Black, E. L., Christensen, T. E., & Gee, K. H. (2021). CEO pay components and aggressive non-GAAP earnings disclosure. Journal of Accounting, Auditing and Finance, doi:10.1177/0148558X21989907	Not related: CEO/Exec
Bol, J. C., & Leiby, J. (2018). Subjectivity in professionals' incentive systems: Differences between promotion- and performance-based assessments. Contemporary Accounting Research, 35(1), 31-57. doi:10.1111/1911-3846.12393	Not related: Other
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Peng, E. Y. (2011). Accruals quality and the incentive contracting role of earnings. Journal of Accounting and Public Policy, 30(5), 460-480. doi:10.1016/j.jaccpubpol.2011.06.005	Not related: Other
Pfeiffer, G. M., & Shields, T. W. (2015). Performance-based compensation and firm value-experimental evidence. Accounting Horizons, 29(4), 777-798. doi:10.2308/acch-51143	Not related: CEO/Exec
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Sauset, J., Waller, P., & Wolff, M. (2015). CEO contract design regulation and risk-taking. European Accounting Review, 24(4), 685-725. doi:10.1080/09638180.2015.1071275	Not related: CEO/Exec
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Schöndube-Pirchegger, B., & Schöndube, J. R. (2012). The value of extended delegation in dynamic agency. Management Accounting Research, 23(3), 158-170. doi:10.1016/j.mar.2012.07.001	Not related: Other
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Sloan, R. G. (2001). Financial accounting and corporate governance: A discussion. Journal of Accounting and Economics, 32(1-3), 335-347. doi:10.1016/S0165-4101(01)00039-8	Not related: Other
Slof, E. J. (1999). Transfer prices and incentive contracts in vertically-integrated divisionalized companies. European Accounting Review, 8(2), 265-286. doi:10.1080/096381899336032	Not related: Other
Soderstrom, N. S. (1993). Hospital behavior under medicare incentives. Journal of Accounting and Public Policy, 12(2), 155-185. doi:10.1016/0278-4254(93)90010-9	Not related: Other
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Versano, T. (2021). Silence can be golden: On the value of allowing managers to keep silent when information is soft. Journal of Accounting and Economics, 71(2-3) doi:10.1016/j.jacceco.2021.101399	Not related: Other
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Wang, P., Darrough, M., & Shi, L. (2016). Earnings warnings and CEO welfare. Journal of Business Finance and Accounting, 43(9-10), 1197-1243. doi:10.1111/jbfa.12213	Not related: CEO/Exec
Webb, R. A. (2002). The impact of reputation and variance investigations on the creation of budget slack. Accounting, Organizations and Society, 27(4-5), 361-378. doi:10.1016/S0361-3682(01)00034-4	Not related: Other
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Wruck, K. H. (1993). Stock-based incentives and investment decisions: A comment. Journal of Accounting and Economics, 16(1-3), 373-380. doi:10.1016/0165-4101(93)90018-B	Not related: CEO/Exec
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APPENDIX 3: Realist review

1 PERFORMANCE-BASED COMPENSATION EFFECTIVENESS

Statement 1A

PBC (C) increases firm performance (O), namely employee performance (O) and output quality (O) because PBC increases motivation to perform better (M), and motivates employees to learn how to perform better (M). PBC also reduces over-optimism (M), increases teamwork (M), and increases goal congruence (M). The positive outcome is observed in at least the following cases: Work is complex (C), employees have not explicitly voiced a preference for money bonuses (C), and PBC is rewarded on dimensions that increase firm performance (C).

"Our first result was that switching to PPBC (Partially performance-based compensation) led to a highly significant (1% level of significance) increase in the productivity of employees measured by the average number of typed pages per workday of 9,53%. . . . We find that the observed productivity gains do not merely persist but rather seem to grow over the time an employee is on PPBC, although with a decreasing slope. The employees in our sample seemed to find ways of working faster and/or more efficiently once they were exposed to financial incentives based on their output. These productivity gains seemed to be largest following the months after the initial switch to PPBC." (Unger, Szczesny, & Holderried, 2020)

"[M]anagers and their superiors are likely to form different expectations about the extent and, potentially more importantly, the direction of planned effort by managers. . . . the incentive system moderated self-enhancement tendencies on the total planned hours of managerial effort made by managers (subordinate/employee in this context)." (Cianci, Kaplan, & Samuels, 2013)

"If the employer wishes the employee to learn certain aspects of the job, attaching bonuses to those aspects not only motivates the employee to exert effort in learning, it

also reduces the effort required by making knowledge acquisition more automatic." (Luft, 1994)

"We find that the implementation of the plan is associated with increases in sales that persist and increase over time. As such this finding supports the basic agency-theoretic assumption that output increases when agents are rewarded for performance. . . . These observations are consistent with the permanent sales consultants (but not the temporary workers) optimally assessing the multi-period implications of working to develop long-term service relation with customers, or to learn how to perform their task more efficiently, which translates into future sales gain." (Banker, Lee & Potter, 1996)

"Moreover, the plan motivates the employees remaining with the firm to continually improve their productivity, which suggests that pay-for-performance provides incentives to invest in effort that has long-term performance effects." (Banker, Lee, Potter, & Srinivasan, 2000a)

"Finally, bonus contracts tended to be used in settings where the profit (or surplus) of the hospital was substantially affected by administrator effort (i.e., hospitals with a more complex set of service offerings)." (Lambert & Larcker, 1995)

"I find that being in the monetary incentives condition (i.e.,being eligible to win a cash bonus) leads to an increase in performance only for those who state a low preference for this incentive." (Lourenço, 2020)

"[O]ur results indicate that as long as they understand the EVA concept managers on EVA bonus plans outperform managers on traditional bonus plans. . . . increases in performance arise because of increased consistency in the evaluation–reward process rather than from superiority of EVA as a performance measure. Also, we find that the effect of EVA bonuses and understanding can differ dramatically for different parts of the firm which suggests that EVA may not be universally appropriate."(Riceman, Cahan, & Lal, 2002)

"I find significant improvements in worker productivity and product quality as well as reductions in worker absenteeism and turnover after the implementation of the incentive plan. These findings underscores an important point that has not been emphasized in existing empirical studies of incentive pay for teams: the need to introduce management control and organizational changes in tandem with incentive pay to capture greater incentive effects from workers."(Román, 2009)

"Although the higher spread [of equity compensation] was seen as a recruitment tool and a way to motivate partners to improve their performance, firms remained conscious of the need to carefully manage the spread as it could lead to discontent within the partner cohort and have considerable implications for the firm's values." (Coram & Robinson, 2017)

"[P]iece-rate incentives lead to higher productivity than fixed pay incentives in the absence of a value statement, but the presence of an organizational value statement moderates the productivity effects of the alternative compensation incentive schemes." (Akinyele, Arnold, & Sutton, 2020)

"Our analysis also documented that nonfinancial performance improves following the implementation of the incentive plan that included nonfinancial measures. Financial performance as measured by operating profit also improves both in terms of long-term increases in revenues associated with current improvement in customer satisfaction and reduction in operating costs." (Banker, Potter, & Srinivasan, 2000b)

Statement 1B

PBC (C) is less effective (O) when it makes organizational structures too inflexible (M) and when intrinsic motivation is high (C), or employees are committed to firm values (C) because employees are motivated by other things than monetary bonuses (M). The ineffectiveness can also be observed when employees are not committed to the firm in the long term (C). Additionally, strong monitoring (C) reduces the effectiveness of PBC (O), because of employees perceiving the monitoring negatively (M). Also, if PBC dimensions do not match with desired output (C) the performance is hindered (O) due to

discouraged effort towards voluntary work (M) and increased misreporting (M).

"While we could not detect a positive effect on profits from the use of incentive compensation in the US firms, we did find a positive effect on pay satisfaction in those firms. In the Dutch firms, though, the effects of the use of incentive compensation on both net profit and pay satisfaction were negative. This finding suggests that provision of incentives should not be considered part of a set of ''global best practices.'''' (Jansen, Merchant, & Van der Stede, 2009)

"The bonus had little impact on the primacy of intrinsic rewards, on the creation of tensions, and on the organisation's culture. . . . Our analysis has indicated that the motivational effect of extrinsic rewards – taken as being important in the business sector – is greatly-reduced in the NFP (not-for-profit) sector. NFP staff appear to be motivated along the lines of stewardship theory." (Kluvers & Tippett, 2011)

"As predicted, there is a significant increase in the moderation effect on incentive schemes (fixed pay versus piece-rate) when the value statement is made more salient, such that productivity is further enhanced under a fixed pay scheme although productivity is not significantly affected under the piece-rate incentive scheme. This provides a positive outcome as it implies that the significant moderation effect of a more salient general value statement is due to improvement in fixed pay productivity." (Akinyele, Arnold, & Sutton, 2020)

"There is also strong evidence that the impact of the incentive contract is lower when the proportion of temporary workers is higher. These observations are consistent with the permanent sales consultants (but not the temporary workers) optimally assessing the multi-period implications of working to develop longterm service relation with customers, or to learn how to perform their task more efficiently, which translates into future sales gain." (Banker, Lee, & Potter, 1996)

"More precisely, the motivational effect of RPI [Relative Performance Information, which can be considered very similar to PBC in this particular study] diminishes, the more the working environment undermines individuals' perceived autonomy, and the

more intrusive individuals perceive controls to be." (Schedlinsky, Schmidt, & Wöhrmann, 2020)

"When we examine the association between profit-based compensation and charity care levels, we find a negative association within for-profits and no association within nonprofits." (Eldenburg, Gaertner, & Goodman, 2015)

"Preparing disaggregated forecasts leads to a greater increase in forecast optimism (compared to preparing aggregated forecasts) in the presence of performance-based incentives than in the absence of performance-based incentives." (Chen, C. X., Rennekamp, & Zhou, 2015)

"Using a capital budgeting setting, we show that a principal's choice of an incentive contract over a fixed-salary contract can suggest that other agents are likely to report high costs, revealing crucial information about social norms in the setting. This information changes the agents' norm perception and increases their level of misreporting." (Cardinaels & Yin, 2015)

"The study also illustrates, however, that the new incentive system and its complements made a trade-off with broader organizational concerns such as flexibility (job rotation) and cultural norms of equity. These trade-offs had a significant impact on the perceived success of incentive pay in the camshaft cell, eventually leading to the termination of the new incentive system." (Friis, Hansen, & Vámosi, 2015)

"[W]e find that EPS dilution significantly affects financing choice when executives are explicitly compensated on EPS performance. . . . We also report evidence that using EPS as a performance measure in bonus contracts and the resulting managerial fixation on reported EPS alleviate underleveraging, as indicated by firms' speed of adjustment to target leverage ratios and debt conservatism levels." (Huang, Marquardt, & Zhang, 2014)

"[I]ncreased reward potentials might tempt managers to maximize their current-period bonus in destructive ways-by making short-term decisions or by managing earnings-even though senior and middle-level Fiat managers are, with rare

exceptions, long-term employees with a high level of loyalty to the company."(Merchant & Riccaboni, 1990)

2 PERFORMANCE MEASUREMENT

Statement 2A

When performance measurement is possible to do more accurately (C), and the weight on PBC can be increased (C) the performance is increased (O), due to reduced compression bias (M). Accurate external performance standards (C) also mitigate gaming issues (O) as external targets cannot be manipulated (M).

"We find greater weight on performance-based compensation when less revenue is received through capitation payments, physicians are more experienced, the practice is larger, and a professional management company performs administrative functions for the practice. Conversely, performance-based compensation receives less weight when physicians perform activities that are not well captured in standard clinical productivity measures or when more physicians in the group practice the same specialty, increasing mutual monitoring ability." (Ittner, Larcker, & Pizzini, 2007)

"[A]rguments for applying piece rates are particularly well-reasoned and persuasive if "output is easily measured, quality problems are readily detected, and blame is assignable". The output (and input) of typing dictations can easily be measured. Furthermore, typing dictations is a task that is very closely controlled by concerned physicians and senior physicians; consequently, potential quality problems can purposefully be identified, and blame is easily assignable." (Unger, Szczesny, & Holderried, 2020)

"[W]e find that (1) agent performance improvement is positively associated with degree of discriminability, (2) subjective measures are inferior to objective measures in providing incentive to the agent because of lack of discriminability, and (3) such inferiority of subjective measures is exacerbated in a situation where the discriminability gap between objective and subjective measures is greater." (Ahn, Hwang, & Kim, 2010)

"Many recent innovations in organizational structures and incentive design mitigate potential problems with internal standards by effectively "externalizing" the performance standard; that is, by basing standards on objective measures beyond the direct control of managers." (Murphy, 2000)

Statement 2B

Suboptimal dimensions of measurement (C) risk poor performance (O) because of short-term focus (M), earnings management (M), or misleading targets (M).

"[W]e find that EPS dilution significantly affects financing choice when executives are explicitly compensated on EPS performance. We also find that clientele effects related to transient institutional ownership levels contribute to the phenomenon, but our results linking investor sentiment to an avoidance of EPS dilution were sensitive to several research design choices." (Huang, Marquardt, & Zhang, 2014)

"[I]ncreased reward potentials might tempt managers to maximize their current-period bonus in destructive ways-by making short-term decisions or by managing earnings-even though senior and middle-level Fiat managers are, with rare exceptions, long-term employees with a high level of loyalty to the company." (Merchant & Riccaboni, 1990)

3 SUBJECTIVE MEASURES

Statement 3A

Subjective PBC (C) is effective in supporting objective PBC (O) when objective measures fail to encourage cooperation (M) or long-term focus (M), and when objective performance is noisy (M). Also, effectiveness is elevated when the strategic business unit is young (C), creativity is required (C), and in the case of team-based PBC, the team tasks are not interdependent of each other (C).

"[W]e find evidence that subjective bonuses are used to mitigate perceived weaknesses in bonus awards based on quantitative performance measures, such as in situations where formula bonuses fail to adequately encourage investments with long-term

impacts, such as in training and where formula bonuses fail to encourage cooperation or where performance is noisy due to the influence of other departments." (Gibbs, Merchant, Van der Stede, & Vargus, 2004)

"Supervisors raise current, unexpectedly low performance so that it is consistent with prior performance when they perceive the measure of that performance is incomplete and noisy, consistent with their mandate of improving objective measurement." (Woods, 2012)

"That is, the effect on incentive compensation of unusually high (low) performance that may be due to good (bad) luck can be filtered out with a lower (higher) subjective performance assessments. This study considers an additional use of ex post subjectivity in providing for parity in risk-adjusted compensation under 'one-size-fits-all' (OSFA) incentive contracts commonly used for non-executive managers." (Anderson, Dekker, Sedatole, & Wiersma, 2020)

"The findings also show an association between subjective bonus this period and performance improvements next period. This association is consistent with these bonuses having a long-term effect on employee commitment." (Aranda, Arellano, & Davila, 2019)

"Focusing on the use of non-financial performance measures, we predict and find that the demand for discretion increases as measurability decreases. Furthermore, congruity amplifies the rate of increase in the demand for discretion." (Huang, Balakrishnan, & Pan, 2021)

" [G]reater reliance on long-run criteria as well as greater reliance on subjective (nonformula) approaches for determining the SBU general managers' bonus contributes to effectiveness in the case of build SBUs but hampers it in the case of harvest SBUs" (Govindarajan & Gupta, 1985)

"Combining PBP (performance-based pay, implies objective measures) with SPE (subjective performance evaluation) allows creative firms to direct their employees' attention to overall company goals without paying the cost associated with the

dysfunctional effects of PBP for creative behavior. This complementarity also implies that the use of PBP is conditional on the use of SPE." (Grabner, 2014)

"[W]e find that discretion over compensation has a positive effect on team output relative to equal bonus allocation when task interdependence is absent and a negative effect when task interdependence is present. The results arise because, as managers do not fully ignore inefficient effort that does not contribute to team output, they are less successful in using discretion to link employees' bonuses to team output contributions when task interdependence is present." (Arnold & Tafkov, 2019)

Statement 3B

The use of nonfinancial and HR measures (C), especially in situations with strong interdependence between business units (C), is beneficial (O) when pay structure is hierarchical and the human capital has strong emphasis (M) when nonfinancial measures can reduce the noise of accounting measures (M) and because of metrics with long-term emphasis like customer satisfaction (M).

"Taken together, the results show that labor-intensive firms that employ a hierarchical pay structure are more likely to use both non-financial and human resource measures than they are to rely solely on traditional financial measures."(Widener, 2006)

"In the presence of interdependencies, such as joint demand or production functions, ensuring cooperation among business unit managers is not a straightforward task. We find that firms do not reduce their use of accounting return measures in an effort to encourage cooperation but instead add weight to disaggregated measures such as expenses and revenues, and nonfinancial measures, which are less susceptible to the effects of these interdependencies. . . . Our theory suggests that nonfinancial measures are used in response to increasing interdependencies because they are able to reduce the noise in accounting measures." (Bouwens & Van Lent, 2007)

"Our analysis also documented that nonfinancial performance improves following the implementation of the incentive plan that included nonfinancial measures. Financial performance as measured by operating profit also improves both in terms of long-term

increases in revenues associated with current improvement in customer satisfaction and reduction in operating costs." (Banker, Lee, Potter, & Srinivasan, 2000a)

Statement 3C

Subjectivity can be used (C) to counter environmental heterogeneity (O) in commonly used firm-wide PBC contracts (M) because environmental uncertainty makes the PBC effect more muted (M).

"We interpret our results as evidence that supervisors use discretion in setting subjective ratings to mitigate heterogeneity in the compensation risk imposed on managers by the OSFA [One size fits all] compensation contract. Subjectivity thus provides not only the means to reward hard-to-measure dimensions of performance and to adjust compensation ex post based on post-contractual information, but also the ability to deliver differential risk premiums to managers thereby achieving greater parity in risk-adjusted compensation among managers with similar jobs." (Anderson, Dekker, Sedatole, & Wiersma, 2020)

"Discretion is used at the beginning of the period when setting targets and at the end of the period, when deciding on subjective bonuses. This association allows managers to customize targets to the personal characteristics of employees and their units. This customization gives managers the possibility of setting targets closer to the optimal level from a goal setting theory perspective rather than being limited to the alternatives available in formula-based contracts." (Aranda, Arellano, & Davila, 2019)

"Our findings support Prendergast's [2011] argument that this tradeoff relates to contracting difficulty; that is, as noise created by external volatility increases, there is a relatively greater preference for employee selection. That is not to say that incentive contracting will not be used as it continues to play an important role by providing motivation and reinforcing selection processes, but it becomes more "muted" when contracting on output becomes increasingly difficult" (Abernethy, Dekker, & Schulz, 2015)

"Overall, the findings show that corporate-level effects predominantly drive variations in MCISs, which suggests that MCISs tend to be uniformly implemented within firms, rather than to reflect local business-unit conditions." (Van der Stede, 2003)

Statement 3D

Peer-review-based PBC (C) increases performance (O), because of the higher accuracy of compensation in a team setting (M) and limited risk of bias in peer-review quality (M) especially when teams are homogenous (M). Peer-reviewing also promotes knowledge sharing (M). Peer-review is also effective (O) when cooperation and knowledge sharing among team members is beneficial for the member (M), especially when the team members are team-oriented instead of individually oriented (C).

"Consistent with our predictions, we find that TSC (team member subjective communication) increases team performance, but that the positive effect of TSC is more muted for heterogeneous teams." (Arnold, Hannan, & Tafkov, 2018)

"[W]hen workers had both increased cost driver information [Activity-Based Costing instead of Volume-Based Costing] and higher incentives to cooperate [Group Incentives instead of Tournament Incentives], they initiated more cooperative innovations, had lower production costs and higher profits than any other examined combination of cost system and incentive structure." (Drake, Haka, & Ravenscroft, 1999)

"[R]esults suggest that participants express a greater willingness to help a new colleague when it involves knowledge sharing than when it does not, but only when the helpee can influence the implicit reward. Moreover, we find that helpees provide higher rewards for help involving knowledge sharing than help that does not .. . . By examining the role knowledge sharing plays in enhancing implicit, trust-based incentives, our results contribute to a better understanding of observations from practice. In particular, we observe organizations who particularly value knowledge sharing tie bonuses to the subjective, ex post evaluations of work-team colleagues" (Haesebrouck, Van den Abbeele, & Williamson, 2021)

"We find no difference in group performance depending on incentive structure for assembly lines; however, group performance is higher under group incentives for teams. Supplemental analysis indicates group incentives support the teams' ability to implement beneficial task strategies and although mixed incentives are theoretically appealing, they may send confusing signals to employees about where to direct their effort." (Kuang & Moser, 2011)

"The results indicate that significantly more knowledge is shared under group incentives relative to individual incentives when status differences are present, whereas the amount of knowledge shared does not differ across incentive regimes for equal-status groups. Thus, although individual incentives can motivate knowledge sharing among equal-status groups, they cannot overcome the negative effects that arise with status differences. Instead, group incentives can mitigate the negative effects of status differences on knowledge sharing." (Haesebrouck, Cools, & Van Den Abbeele, 2018)

"[W]hen plants use output performance measures, they are more likely to sue exclusively group-based (as opposed to individual-based) output measures when the value of knowledge sharing is greater and when, production workers possess less specific knowledge." (Hwang, Erkens, & Evans III, 2009)

"Organizations with collectivist individuals appear to demand group-based incentives rather than individual incentives. It seems that the trend of using teamwork should be accompanied by an appropriate team design, distinguishing between group task designs and carefully considering how to reward the performance of the team (individual versus group incentives)."(Naranjo-Gil, Cuevas-Rodríguez, López-Cabrales, & Sánchez, 2012)

"We rely on goal interdependence theory to predict that when group members can provide useful information about how to perform the task better (i.e., in a team production environment), group incentives will motivate group members to interact, share information and learn from each other, resulting in higher group perfroamcen than under individual or mixed incentives. Our results support this prediction." (Libby & Thorne, 2009)

Statement 3E

With a heterogenous team, (C) team-based PBC is less effective (O) with both subjective manager evaluation (C) and peer-review evaluation (C) because the inability to accurately review peers causes performance-reward mismatch (M), and discretion in manager evaluation reduces team cohesion and discourages helping (M).

"These divergent fairness reference points result in more divergent information provided to the manager. The increased divergence causes the manager to deviate more from the individual team member's TSC (team member subjective communication) when determining bonus allocations. As a result of these two effects, the relation between individual contributions and rewards is weakened in heterogeneous teams, resulting in lower contributions to team output." (Arnold, Hannan, & Tafkov, 2018)

"[W]e find that discretion over compensation has a positive effect on team output relative to equal bonus allocation when task interdependence is absent and a negative effect when task interdependence is present. The results arise because, as managers do not fully ignore inefficient effort that does not contribute to team output, they are less successful in using discretion to link employees' bonuses to team output contributions when task interdependence is present. Additionally, managerial discretion reduces team cohesion, thereby hurting coordination and helping, which is problematic under task interdependence, where coordination and helping are important for achieving high team performance." (Arnold & Tafkov, 2019)

Statement 3F

Subjective performance measures (C) induce uncertainty and perceptions of favoritism in evaluation (O) when subjectivity allows the managers to evaluate based on inappropriate criteria (C) and change the criteria rapidly (C) because subjective measures are susceptible to manager's prejudice and bias (M). Namely, managers tend to mediate extreme reviews (M), punish good performers less than bad performers (M) and at worst, poorly evaluate employees they wish to push out of the organization (M).

"We find that the use of subjectivity in weighting the measures in a balanced scorecard bonus plan allowed supervisors to ignore many performance measures, with financial performance became the primary determinant of bonuses. In addition, the subjectivity in the balanced scorecard plan allowed area directors to incorporate factors other than the scorecard measures in performance evaluations, to change evaluation criteria from quarter to quarter, to ignore measures that were predictive of future financial performance and to weight measures that were not predictive of desired results." (Ittner, Larcker, & Meyer, 2003)

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"Overall, the results of this study indicate that accounting practices related to performance evaluation may be influenced by implicit attitudes that yield some degree of racial bias in decisions." (Upton & Arrington, 2012)

"Our study provides evidence that experienced auditors with higher tacit knowledge are better supervisors. Supervisors with higher tacit knowledge may well be less likely to provide inadequate supervision of subordinates and other team members. . . . Our theory and results collectively suggest that supervisor-specific attributes not only influence how well supervisors evaluate, but also what factors they value and reward." (Bol, Estep, Moers, & Peecher, 2018)

"[W]e find that the participants' bonus reduction is lower (higher) when the employee's objective performance is higher (lower). We show that an employee's good objective performance serves as a halo for the manager's perception of the employee's morality and affects the ex-post subjective bonus adjustment." (Maske, Sohn, & Hirsch, 2021)

"[W]e find that (1) agent performance improvement is positively associated with degree of discriminability, (2) subjective measures are inferior to objective measures in providing incentive to the agent because of lack of discriminability, and (3) such inferiority of subjective measures is exacerbated in a situation where the discriminability gap between objective and subjective measures is greater." (Ahn, Hwang, & Kim, 2010)

"Evidence documents that supervisors make downward adjustments to encourage some employees to leave the organization, and avoid downward adjustments to preclude negative consequences for managers and themselves." (Woods, 2012)

Statement 3G

Giving managers discretionary power over distributing bonuses (C) does not make bonus payments more accurate (O) due to anchoring heuristic (M) and reluctance to make downward adjustments (M), and manager tendency to battle unfairness more than promote fairness even if it incurs extra costs in evaluation (M). Especially during shocks (C) managers are reluctant to make changes to avoid upsetting the employees (M).

"[W]e find that managers generally use a piecemeal approach when allocating discretionary bonus pools, which gives rise to the anchoring heuristic. That is, when processing performance information, managers tend to choose a starting point and then qualitatively adjust from this starting point for noncontractible information. . . . Importantly, we find that managers who use an anchoring approach incorporate noncontractible information into bonus pool allocations to a lesser degree than those who use an integrative approach." (Bailey, Hecht, & Towry, 2011)

"We find greater consideration of noncontractible information under partial discretion than under full discretion. Thus, our results imply that limiting discretion can facilitate managers' incorporation of relevant noncontractible information into bonus allocations." (Bailey, Hecht, & Towry, 2011)

"We argue that managers consider event likelihood when considering whether and to what extent they make discretionary adjustments, but that the implications of this

consideration are muted in scenarios characterized by higher employee bonus interdependence. Via an experiment, we find support for our predictions. Our results suggest that the effect of event likelihood on managers' use of discretion is explained by managers' consideration of the precedent that an adjustment in the current period sets for future periods, and the type of motivation (i.e., conventional versus adaptive) that an adjustment induces. Further, we find that the effect of bonus interdependence on managers' use of discretion is explained by managers' consideration of the demotivating influence of such adjustments on the manager not affected by the event." (Bol, Hecht, & Smith, 2015)

"Specifically, we find that managers are less likely to make discretionary adjustments in scenarios in which firms are more likely to endow managers with such discretion—namely, scenarios in which employees are more susceptible to compensation risk (i.e., when the likelihood of negative uncontrollable events is high). . . . Notably, we find that managers are unwilling to make adjustments to restore equity for one subordinate in highly interdependent situations in which another unaffected subordinate would be negatively and directly impacted." (Bol, Hecht, & Smith, 2015)

"Our study shows that even in the absence of such monetary incentives, social preferences can motivate managers to obtain additional costly information in order to evaluate and reward their employees according to their efforts. . . . However, this willingness is influenced by the outcome of aggregate performance. Specifically, this willingness increases as aggregate performance becomes less extreme and (given a specific level of extremeness) as aggregate performance increases. . . . The findings furthermore show that paying for fairness is not a dichotomous choice, as willingness to pay increases with the potential unfairness of the situation." (Maas, Van Rinsum, & Towry, 2012)

"New performance measures required new reporting procedures. For certain measures, reporting responsibility was assigned to functional and business unit managers. The reason for not automating this procedure, nor to pass the responsibility to controllers, was that an objective was making responsible managers verify the data and, most importantly, to increase these managers' awareness of how certain

measures were originated and how they could initiate actions to improve results." (Tuomela, 2005)

"Supervisors raise current, unexpectedly low performance so that it is consistent with prior performance when they perceive the measure of that performance is incomplete and noisy, consistent with their mandate of improving objective measurement. Supervisors also raise current, unexpectedly low performance so that itis consistent with prior performance for other reasons, and even apparently holistically (at the manager level). Evidence documents that supervisors make downward adjustments to encourage some employees to leave the organization, and avoid downward adjustments to preclude negative consequences for managers and themselves." (Woods, 2012)

4 FAIRNESS PERCEPTIONS

Statement 4A

The fairer the employee perceives the PBC (C), the better the organizational performance (O) because organizational citizenship behavior increases (M) and motivation increases (M), and vice versa if the PBC is perceived as unfair (C) it hinders performance (O).

"[H]igher perceptions of procedural justice are associated with better employee performance through organizational citizenship behavior." (Burney, Henle, & Widener, 2009)

"[H]aving to pay a penalty for not achieving an uncertain target is perceived as unfair, and employees may be less motivated to work under such an incentive arrangement." (Liu & Zhang, 2015)

"[W]e show that pay dispersion has a reinforcing effect on the incentive-performance link when it is more likely to be considered legitimate, while it decreases the incentive effects when it is likely considered as unfair. . . . our results suggest employees are largely aware of the pay of others and use social comparison in their effort provision

decisions. This suggests that pay transparency, at least as measured by the disclosure of pay levels, exists without a formal policy. Our results highlight the importance of the perceived legitimacy of observed pay dispersion in the effort provision decision."(Grabner & Martin, 2021)

"If the level of payment is unfair, neither a bonus nor a penalty seems to matter. If individuals see that they earn less than their peers, they perceive it as a loss." (Oblak, Ličen, & Slapničar, 2018)

Statement 4B

Employees perceive PBC as fairer (O) when PBC has increased technical validity (C), reflects the firm strategy (C), by offering signing bonus (C), utilizing subjective performance measures (C), or by offering choice in bonus contract type (bonus/penalty) (C) and the firm has an otherwise legitimate and fair compensation policy (C), because the firm signals trust (M).

"[P]erceptions of two characteristics of an SPMS (Strategic Performance Management System) incentive plan — its degree of technical validity and the extent it reflects a strategic causal model — are associated with higher perceptions of both distributive and procedural justice." (Burney, Henle, & Widener, 2009)

"[S]igning bonus offers positively affect effort to a greater extent when there is an excess supply of labor than when there is an excess demand for labor. I also find that the impact of signing bonus offers on effort operates through workers' beliefs about the employer's trust in them." (Choi, 2014)

"[W]e show that pay dispersion has a reinforcing effect on the incentive-performance link when it is more likely to be considered legitimate, while it decreases the incentive effects when it is likely considered as unfair. . . . our results suggest employees are largely aware of the pay of others and use social comparison in their effort provision decisions. This suggests that pay transparency, at least as measured by the disclosure of pay levels, exists without a formal policy. Our results highlight the importance of the perceived legitimacy of observed pay dispersion in the effort provision decision."(Grabner & Martin, 2021)

"[T]he effect of distributive justice outweighs the effect of procedural justice on intrinsic motivation. In other words, people care more about how fair their pay is compared to others than how their pay is determined." (Oblak, Ličen, & Slapničar, 2018)

"In support of the idea that subjectivity aids contracting with the manager when trust is higher, we find that subjective bonuses are positively associated with pay satisfaction and performance when the manager has longer tenure at the dealership." (Gibbs, Merchant, Van der Stede, & Vargus, 2004)

"Regarding the ex ante design characteristics, we find a nonlinear, inverted U-shaped relationship between subjectivity emphasis and perceptions of distributive and procedural fairness, consistent with the notion that the use of subjective measures involves trade-offs that can differ depending on the emphasis on subjectivity." (Voußem, Kramer, & Schäffer, 2016)

"Our study provides evidence that it might be better for employers to let workers know that they are intentionally offering different types of contracts, and allowing workers to self-select into either a bonus or penalty contract to achieve the benefits of workers having a choice of contracts without experiencing the costs that could result from forcing them to work under a specific contract type." (Gonzalez, Hoffman, & Moser, 2020)

5 PERSONAL AND CULTURAL DIFFERENCES

Statement 5A
Individuals (C) tend to prefer contracts with PBC (O) when they are more skilled, prefer more risk, look for achievements and blame themselves less for shortcomings (M).

"We find that individual's skill, risk preferences, need for achievement and locus of control is each significantly associated with selecting a contract with performance incentives." (Fehrenbacher, Kaplan, & Pedell, 2017)

"Our results regarding performance feedback suggest that individuals' preferences for relative-performance-based pay when working on easy tasks versus difficult tasks is robust to the provision of individual performance feedback. However, we find some evidence that providing relative feedback on difficult tasks induces higher-skilled individuals to appropriately choose relative performance-based pay more often." (Brown, Farrington, & Sprinkle, 2016)

Statement 5B

Involving the employee in the negotiation of PBC metrics and targets (C) does not yield good results (O), because employees do not necessarily know what drives their work performance (M), they might sandbag the budgeting process (M) and they generally choose PBC system that appears less risky even if it is less valuable (M).

"We find that, while employee effort and firm profit are lower with negotiation than without negotiation under the output-based contract, they do not differ significantly with versus without negotiation under the fixed-wage contract." (Kuang & Moser, 2011)

"I find that being in the monetary incentives condition (i.e.,being eligible to win a cash bonus) leads to an increase in performance only for those who state a low preference for this incentive." (Lourenço, 2020)

"[S]elf-reported motivators do not necessarily lead to a higher performance, i.e., preferences for and performance with different work incentives may be inconsistent. Therefore, designing incentive schemes based solely on self-reported ex-ante preferences may not always lead to ex-post improvement in work performance." (Lourenço, 2020)

"We find that participants exhibit a strong better-than average bias in assessing their skills on easy tasks. Conversely, we find that participants exhibit a moderate worse-than-average bias in assessing their skills on difficult tasks. In turn, these biases guide contract choices, which leads to one of our key findings that participants are more likely to inappropriately select relative performance-based pay than fixed pay when a

task is easy versus when a task is difficult. Our results suggest that when choosing between fixed pay and performance-based pay that pays a bonus for above-average performance, the quality of individuals' compensation plan decisions is worse when working on an easy task than when working on a difficult task." (Brown, Farrington, & Sprinkle, 2016)

"There is also ample evidence that basing standards on company budgets creates unproductive incentives to "sand-bag" the budgeting process. . . . Tying managerial bonuses to meeting the budget not only creates incentives to avoid current actions that affect future budgets, but also to provide biased and misleading information during the budget negotiation process." (Murphy, 2000)

"Finally, results indicate that when the two clawback contracts are compared, participants find the contract frame with the higher base salary to be more attractive. This is a somewhat unexpected result, because these two frames both provide an equal initial amount of pay that is not contingent upon a subsequent outcome. The only difference between the contracts is in the labeling of the portion of this amount called the ''base salary'' and the portion called a ''bonus.'' This very subtle manipulation has a significant impact on participant reactions. This provides evidence that the verbal labeling of the components of these contracts can have a strong effect on behavior and should, therefore, be carefully considered." (Brink & Rankin, 2013)

Statement 5C

There are large regional differences in PBC (O), as Chinese and European firms use PBC more rarely than North American firms (C), because of lack of experience with PBC systems (M) – especially when firms are state owned (O). Additionally, differences can be caused by significantly higher tax rate reducing the net reward (M), differences in power distance (M) and lower level of cultural preference for competitiveness, achievement, and material success (M).

"As compared to the US firms, the Dutch firms are much less likely to provide their managers with incentive compensation in any form. Where Dutch firms do offer incentive compensation, the payouts are smaller and their bonus awards are less likely

to be based on profit measures of performance." (Jansen, Merchant, & Van der Stede, 2009)

"[S]cores on the masculinity dimension of culture in the USA, the Netherlands and China were 62, 14 and 66, respectively. This suggests that both the USA and China are similar in their degree of masculinity, on average, whereas the Netherlands appears to be relatively 'feminine' as measured by this cultural trait. These differences in masculinity cultural dimension scores seem to reflect the differences we found in the use of incentive compensation in firms in these three countries" (Merchant, Van der Stede, Lin, & Yu, 2011)

"[P]ower distance scores that were essentially equal in the USA and the Netherlands (40 and 38), but significantly higher in China (80). This pattern of scores reflects the relative use of discretion in the assignment of incentive payments that we found in these three countries. . . . Chinese managers' relative lack of experience with incentive systems could explain some of the variance in practice we observed, such as the high use of discretion in assigning bonuses, which might also be associated with measurement systems that are not as well developed." (Merchant, Van der Stede, Lin, & Yu, 2011)

"However, the controlling shareholder (that is, the government) of state-controlled Chinese firms often has non shareholder value-maximizing objectives and thus may have little incentive to adopt a strong managerial pay-for-performance sensitivity. . . . However, consistent with the bonding hypothesis, we find that the sensitivity of managerial cash compensation to firm performance and the level of long-term managerial incentives are significantly higher for state-controlled Red Chip shares than for state-controlled A shares and state-controlled H shares." (Ke, Rui, & Yu, 2012)

6 EMPLOYEE RECRUITMENT

Statement 6A

PBC (C) can be used to choose and attract skilled employees (O) because people

who share the goals and risk tolerance are attracted by specific PBC attributes (M).

"Implementation of the plan leads to the attraction and retention of more productive employees, supporting the hypothesis that a pay-for-performance plan acts as an effective screening device by sorting employees by ability." (Banker, Potter, & Srinivasan, 2000)

"[W]e find that relative-performance-based pay does attract participants with higher skill levels and that risk preferences play an important role in compensation plan selection." (Brown, Farrington, & Sprinkle, 2016)

"Our results support the expectation that the two control choices complement each other, so that the right people are hired and incentivized to achieve pre-specified goals. Output-based performance measures are less likely to result in misallocation of effort (i.e., to those tasks that are easily measured) when individuals are selected with values and beliefs that are similar to their manager and/or the firm as they will strive to achieve output-based goals in such a way that is congruent with the overall goals of the firm." (Abernethy, Dekker, & Schulz, 2015)

"Further, we demonstrate that risk and loss preferences affect preferences for contracts. These psychological constructs may be inherent characteristics of potential employees, which can be difficult to change. Rather, companies face the challenge of designing or describing contracts in a manner that makes them more attractive to the types of employees they wish to hire." (Brink & Rankin, 2013)

Statement 6B

PBC (C) can have a positive effect in retaining employees (O), by lowering performance targets (M), or a negative effect (O) by utilizing penalty contracts (M) especially when employees are skilled and high-quality (C).

"[W]hen firms are greatly concerned about managerial retention, they set performance targets to be relatively easy to achieve." (Matějka & Ray, 2017)

"[W]e find penalties (bonuses) to be associated with a higher(lower) probability of voluntary employee turnover, where the effect of penalties on employee turnover is especially significant for skillful and high-quality workers." (Van der Stede, Wu, & Wu, 2020)

7 CONTRACT FRAMING AND RISK

Statement 7A

Bonus contract, compared to penalty contract (C) is more effective (O) when targets are defined ex-post (C). When contracts are incomplete (C) bonus instead of a penalty (C) or giving the employee a choice between the two (C), indicates trust to the employee (M), and, on the opposite, using a penalty accelerates employee turnover (M). Employees also perceive a bonus better than a penalty (M). In the case where employees can affect the manager's penalty (C), there is also the possibility of retaliation against the manager (M).

"An employer would have to offer a higher set of payoffs to get employees to accept an incentive contract if it is described as a penalty than if it is described as a bonus; and if employers do not gain some greater benefit by using penalty language, there is no reason for them to offer the penalty contracts and incur the extra expense." (Luft, 1994)

"Therefore, the marginal sensitivity of bonuses eventually becomes greater than that of penalties when their value is large, suggesting that a penalty scheme does not always dominate a bonus scheme across the board in motivating employees." (Van der Stede et al., 2020)

"The results indicate that participants prefer bonus-only contracts to economically equivalent penalty-only, bonus and penalty combination, or clawback contracts. We find that penalty-only contracts are viewed as just as acceptable as economically equivalent contracts that contain a combination of bonuses and penalties. Further, we find that contracts framed with a clawback penalty are significantly less attractive than even economically equivalent penalty-only contracts. These results are important

because they provide evidence that there may be unintended consequences associated with the increased implementation of penalties and clawbacks." (Brink & Rankin, 2013)

"[I]ndividuals meet the predetermined performance target more frequently when the target is revealed ex post (88%) than when it is revealed ex ante (47%) under a bonus contract. In contrast, individuals meet the performance target 56% of the time when the performance target is prescribed ex ante and when the target is revealed ex post under a penalty contract." (Liu & Zhang, 2015)

"[F]or a task not governed by the incentive contract, agents exert greater effort under bonus contracts relative to penalty contracts. . . . the relation between contract frame and effort depends on the level of trust induced by the implementation of a bonus or penalty contract." (Christ, Sedatole, & Towry, 2012)

"Implementing a penalty contract can amplify its benefits when the manager has a high quality relationship with his/her subordinates. However, that same penalty can create active resistance among employees with a low quality relationship with their manager." (Christ & Vance, 2018)

"[W]e find penalties (bonuses) to be associated with a higher(lower) probability of voluntary employee turnover, where the effect of penalties on employee turnover is especially significant for skillful and high-quality workers." (Van der Stede, Wu, & Wu, 2020)

"Our results suggest that employers may be able to induce higher worker effort without causing workers to withhold effort on other tasks, or retaliate in other ways, by offering workers a choice of contracts and making the workers aware that the employer intentionally decided to offer the available contracts." (Gonzalez, Hoffman, & Moser, 2020)

Statement 7B

Using a penalty contract instead of a bonus contract is more powerful at exerting effort from employees (O) if employees perceive the compensation and

organization as fair (C), because employees' tendency for loss aversion (M), but it also increases risk-taking (O).

"Relative to a bonus contract, a penalty contract imposed on the manager induces greater effort from subordinate employees who perceive a high-quality relationship with the manager." (Christ & Vance, 2018)

"If in contrast, payment is fair, then a shift from a bonus to a penalty contract significantly increases risk-taking and effort." (Oblak, Ličen, & Slapničar, 2018)

"We find that an RMB1 penalty motivates a higher level of effort and performance than an RMB1 bonus. This is consistent with the theoretical argument that penalties have a stronger effect than bonuses due to humans' loss aversion tendency." (Van der Stede, Wu, & Wu, 2020)

Statement 7C

Employee risk-taking can be avoided (O) by careful feedback of poor performance (C) because employees tend to compensate for poor performance by taking risk (M), by utilizing clawback provisions in high-risk investments (C) because managers are more liable for results (M), and by utilizing bonus instead of penalty contracts (C), especially in decisions that only affect loss size (M).

"[T]he deteriorating performance is not due to reduced effort but rather to reduced effectiveness of the participants' task strategy as they devote cognitive resources to activities unrelated to the tasks and/or adopt more high-risk strategies." (Hannan, Krishnan, & Newman, 2008)

"We find that clawback provisions in a loss position, where the outcome of an investment decision changes only the size of a loss, lead to additional risk-taking, whereas clawback provisions reduce risk-taking in a mixed-outcome position, where the outcome of an investment leads to either a gain or a loss." (Hirsch, Reichert, & Sohn, 2017)

"In the fair/bonus condition the frequency of high risk-effort decisions is radically lower than in the fair/penalty condition." (Oblak, Ličen, & Slapničar, 2018)

"In a mixed position, participants refrain from choosing riskier investments that could have a negative impact on their individual compensation." (Hirsch, Reichert, & Sohn, 2017)

"In fact, our results are consistent with participants exhibiting an endowment effect. Whereas loss aversion states that people are more motivated to avoid a future loss than acquire a similar future gain, the endowment effect states that current ownership increases utility. Therefore, the utility of receiving a bonus is less than the disutility of losing a previously awarded bonus. Hence, the endowment effect may have overwhelmed loss aversion under clawback contracts." (Brink & Rankin, 2013)

8 GOALS AND TARGETS

Statement 8A

Long-term performance can be increased (O) with greater reliance on long-run targets (C) because of increased long-term goal congruence (M), with deferral of bonus payments (C) or the use of stock as a bonus payment (C) because of the non-instant reward that rewards long-term focus (M).

"[G]reater reliance on long-run criteria as well as greater reliance on subjective (nonformula) approaches for determining the SBU general managers' bonus contributes to effectiveness in the case of build SBUs but hampers it in the case of harvest SBUs…" (Govindarajan & Gupta, 1985)

"This study provides evidence that contracting on forward-looking performance measures provides benefits to firms regardless of employees' employment horizons, but that the nature of the benefits differs across horizons. For short-horizon employees, forward-looking measures play a decision-influencing role, in that incorporating these measures into incentive contracts aligns such employees' goals with those of the firm and directs employees' efforts to actions that will increase long-term firm

performance. Thus, for short-horizon employees, contracting on forward-looking measures mitigates the shortsightedness that occurs when compensation is based solely on contemporaneous measures. . . . Compensating employees on the basis of forward-looking measures simplifies long-horizon employees multiperiod decision problem by increasing the clarity with which employees identify the performance-maximizing task strategy, thus decreasing the need for employees to experiment with various task strategies and increasing their farsighted efforts. Because resources can be redirected from strategy selection to its implementation and refinement, these employees are more efficient in task execution. Thus, while accounting researchers generally accept that incentive contracts play a decision influencing role in firms, our results demonstrate that they can also play a decision facilitating role, improving the performance even of those employees whose goals are more closely aligned with the firm's long-term interests." (Farrell, Kadous, & Towry, 2008)*

"[A] deferral of economically equivalent bonus payments encourages managers to place greater importance on their responsibility for the firm's long-term interests and their reputation. Hence, managers with a bonus deferral scheme are more willing to make an investment that decreases their current bonus but that is necessary for the firm's future success." (Cheng, Dinh, Schultze, & Assel, 2019)

"[W]hen ESOs and other long-term incentives are absent, investors value employees' annual stock bonus positively, especially when the firm's future investment opportunities are greater, even though the annual stock bonus is tied to the firm's contemporaneous performance. . . . expected future stock compensation may be an important factor when one analyzes the incentive effect of current compensation if employees expect to receive stock compensation in the future conditional on the firm's future performance." (Chen, 2003)

Statement 8B

High profitability firms (C) do not adjust targets upwards when they are achieved (O) but adjust targets downwards when they are not achieved (O), to signal a commitment to long-term and alleviate incentive conflicts (M), while low-profitability firms engage in target ratcheting (C) that decreases performance (O) due to mixed motivation from penalizing good performance

(M). Gaming and target ratcheting can be avoided (O) by utilizing peer performance comparison (C) because of increased accountability (M). Especially when peer-group is high quality (C), and if peer performance targets can be defined ex-post instead of ex-ante (C) because higher targets can be set initially, and then adjusted (M).

"[W]e find that performance relative to target is highly serially correlated and that this serial correlation is attenuated when managers are close to achieving their annual target and therefore have incentives to reduce effort and avoid an overly favorable deviation from target. . . . incorporating peer performance into targets strengthens incentives because it essentially provides commitment that future targets will not fully update for past own performance. . . . high peer group quality is associated not only with lower (greater) sensitivity of targets to past own (peer) performance but also with less end-of-the-year performance gaming." (Casas-Arce, Holzhacker, Mahlendorf, & Matějka, 2018)

"In contrast, when the participants were asked to choose a performance target before embarking on their task, the addition of this absolute reference point indeed resulted in lower levels of sabotage, which we attributed to a shift in competitive focus from rivalry to the task." (Hartmann & Schreck, 2018)

"[W]e find that past performance is generally only partially incorporated in future targets, consistent with some form of commitment. We reason that some principals and agents are able to come to an implicit agreement in which the principal allows the agent to receive economic rents from positive performance-target deviations that are the result of superior effort or transitory gains by not revising targets upward, while the agent accepts target revisions by not restricting output when these revisions are the result of structural changes in the operation's true economic capacity." (Bol & Lill, 2015)

"[W]e find that high-profitability firms commonly decrease earnings targets if their managers fail to meet their prior-year targets but rarely increase earnings targets even if their managers exceed prior-year targets. . . . low-profitability firms commonly revise targets upward if their managers exceed their prior-year targets but rarely

revise targets downward otherwise." (Indjejikian, Matějka, Merchant, & Van der Stede, 2014)

"However, subjective bonuses for year t are not used to motivate employees in advance to accept more-difficult targets for year t + 1. The picture that emerges identifies discretion in bonus decisions as being used to honor an implicit contract by rewarding employees' efforts (a backward-looking role) and building reputational capital to enhance future employees' commitment (a forward-looking motivational role)." (Aranda, Arellano, & Davila, 2019)

"Our results indicate that more difficult targets are rewarded with higher subjective bonuses at the end of the period. This mechanism takes into account the motivational consequences of contracting and provides an alternative to attenuated ratcheting. Thus, discretion appears to play a backward-looking role in enhancing the perceived fairness of budget-based contracts. Discretion also appears to generate commitment going forward, as those branches that receive a higher subjective bonus improve their performance to a greater extent." (Aranda, Arellano, & Davila, 2019)

"Far from innocuous, performance standards generate important incentives whenever the participants in the incentive plan can influence the performance-standard or the standard-setting process. Key examples include paying managers for performance measured relative to budget when the managers are instrumental participants in the budget-setting process, or paying employees on performance relative to prior-year performance, when participants understand that good current performance will be penalized through a high future standard. . . . there is anecdotal evidence that ratcheted standards based on prior-year performance are not value-neutral, but rather have unintended and dysfuncational consequences for organizations." (Murphy, 2000)

"[I]ndividuals meet the predetermined performance target more frequently when the target is revealed ex post (88%) than when it is revealed ex ante (47%) under a bonus contract. In contrast, individuals meet the performance target 56% of the time when the performance target is prescribed ex ante and when the target is revealed ex post under a penalty contract. . . . our experiment shows that an ex post bonus contract not

only significantly out-performs an ex ante bonus contract, but also motivates the highest performance among all four contracts examined in this research (ex post bonus, ex post penalty, ex ante bonus, and ex ante penalty)." (Liu & Zhang, 2015)

"Our last hypothesis thus predicts that subjective ratings are used to provide an additional ex post mechanism to compensate subordinates for the varied exposure to compensation risk arising from performance targets that are deemed ex post to be inappropriate based on the realization of outcomes influenced by unforeseen and uncontrollable events that occurred during the period. . . . Specifically, we predict and find that supervisors give uniformly higher subjective ratings to managers who are exposed to greater compensation risk arising (i) from noise in objective performance measures, and (ii) from variation in the difficulty of targets set for objective performance measures (as measured both ex ante and ex post of the performance evaluation period)." (Anderson, Dekker, Sedatole, & Wiersma, 2020)

"Interactive discussion of strategic problem areas increase the visibility of actions, and strengthen accountability to peers – even more than in diagnostic control. In respect of the latter, it is more likely that external factors smooth the results so that prevailing problems are ignored and/or poor actions are not perceived by others. As a consequence, it is likely that resistance against interactive control systems, grounded in detailed non-financial information, is higher than towards diagnostic control systems for some individuals." (Tuomela, 2005)

Statement 8C

Difficult targets increase performance (O) in a team setting (C) by creating norms within the teams that promote supporting and higher performance (M). Target difficulty and PBC are complements when difficulty is high (M), so increasing PBC while increasing difficulty (C) mitigates performance reduction due to increased difficulty (O).

"Group-based incentives elicited group performance expectations with stronger normative power than did individual-based incentives. The results also suggest that the nature of the group approval curve was altered by the type of incentive scheme and that groups tended to be more supportive under difficult budgets than they did under

moderate budgets. Contrary to our prediction, difficult budgets tended to elicit stronger normative power than did moderate budgets." (Abul-Ezz, 1993)

"[T]arget difficulty and relative incentive weights are complements—increasing the difficulty of a target that is already difficult to achieve has an effort-reducing effect, which can be offset by increasing relative incentive weight on that dimension." (Matějka & Ray, 2017)

Statement 8D

Achievement of targets increases performance (O) because it enhances distributive fairness perception of employees (M) and because in a tournament setting (C) the increased number of winners reduces stagnation of performance of the top and bottom performers (M). If the number of employees who get the rewards in a tournament setting is low (C) it decreases performance (O) because of risk of sabotage (M) and low performers giving up early (M).

"[W]e find that the achievement of bonus targets positively affects perceptions of distributive, but not procedural fairness. . . . The implication of our study is that when determining bonus payouts, supervisors who care about the fairness perceptions of their employees should be less concerned about absolute bonus levels than about how actuals compare to ex ante defined bonus targets." (Voußem, Kramer, & Schäffer, 2016)

"We find that a higher proportion of winners leads to more effort. . . . Specifically, we find that when employees compete in repeated tournaments, their effort varies depending on the proportion of winners. While the loser majority in tournaments with a relatively low winner proportion reduces effort sharply, the winner majority in tournaments with a relatively high winner proportion reduces effort only slightly. . . . While the loser majority in tournaments with a relatively low winner proportion reduces effort sharply, the winner majority in tournaments with a relatively high winner proportion reduces effort only slightly." (Knauer, Sommer, & Wöhrmann, 2017)

"When detailed ABC cost knowledge was combined with a tournament incentive, workers engaged in innovations benefiting only themselves, and the production costs were higher and profits lower than in any other examined combination." (Drake, Haka, & Ravenscroft, 1999)

"As predicted, in the absence of an absolute standard, rankings increased performance levels but also led more participants to sabotage their peers' work." (Hartmann & Schreck, 2018)

9 IMPLEMENTATION

Statement 9A

Implementation of PBC is a critical part and can succeed in increasing firm performance (O) by implementing during a time of good performance (C), because managers become more accepting of the system when it gives them more income (M). If management is motivated the implementation also facilitates collective learning and discussion about organizational goals and strategy (M), which also encourages other intra-organizations to adopt the PBC (O).

"[I]mplementation issues may be far more important to the success or failure of a balanced scorecard systems than the scorecard's technical attributes" (Ittner, Larcker, & Meyer, 2003)

"The high level of subjectivity in the balanced scorecard plan led many branch managers to complain about favoritism in bonus awards and uncertainty in the criteria being used to determine rewards. The system ultimately was abandoned in favor of a formulaic bonus plan based solely on revenues." (Ittner, Larcker, & Meyer, 2003)

"[T]he programme was implemented at the beginning of a sustained period of good performance. They believe that rewards provided early in the programme's history facilitated the managers' acceptance of the program." (Merchant & Riccaboni, 1990)

"In these meetings all top managers were involved in thorough discussions about strategic metrics, assumed cause-and-effect relationships and strategic uncertainties underlying these. . . . The focus of the new strategic performance measurement system gradually (and somewhat unintentionally) shifted towards making sense of strategic uncertainties and trying to capture cause-and-effect relationships assumed to be inherent within the strategy. Altogether, the goal of the new performance measurement system evolved during the construction process from the support of beliefs systems (customer focus) via establishing a diagnostic control system to interactive control system in order to learn about strategy and related factors. . . . In addition, the focus was on discussion and learning –interactive use – and there was no interest in creating a reward or punishment atmosphere. Finally, it was perceived that reward systems should not be tightly linked to the bonus systems when ambiguity about measures and appropriate target levels prevails. But, as suggested above, such a connection might be less important if the managers have themselves developed the system for their own learning purposes."(Tuomela, 2005)

"Firms use the performance measurement system to translate and communicate strategy throughout the firm. Thus, the firm's performance measurement system facilitates transparency within the organization. Finding that labor-intensive firms rely more on the use of non-financial measures, and specifically human resource measures in incentive schemes is consistent with this notion. By clearly including non-financial measures in the incentive schemes the importance of human capital is communicated throughout the firm." (Widener, 2006)

"First, we show that uncertainty about the benefits and costs of performance-based incentive systems plays an important role in the timing of the adoption decision. The mechanisms by which this uncertainty is reduced or even resolved are, therefore, of particular importance to designers of an innovation. In our setting, learning spillovers lead to a reduction in the uncertainty about benefits and costs, . . . Through its organizational structure, a firm influences the degree to which employee or organizational units interact with each other. In our setting, the cooperative nature and the continuing interactions between local banks facilitated learning spillovers. Moreover, by taking an active role in information sharing (e.g., by having regional directors), and by adjusting the innovation to local banks' preferences (e.g., changing

the recommended weights), the organization ensured that early adopters efficiently shared their learning experiences. Hence, the cooperative's organizational design facilitated relatively rapid diffusion of the performance-based incentive system, by encouraging and allowing learning spillovers to take place." (Bol & Moers, 2010)

Statement 9B

PBC is an evolving process in an organization (C), so benefits are only realized after some time (O).

"[P]articipants receiving the incentive-based contract also performed better on the tasks than participants receiving the flat-wage contract. However, the incentive-based contract induced better performance only after the first 15 of the 60 experimental periods." (Sprinkle, 2000)

"Our results are similar in spirit and show that incentive contract design is a dynamic process in which learning is of crucial importance." (Bol & Moers, 2010)

10 FEEDBACK, RECOGNITION AND PROMOTION INCENTIVES

Statement 10A

Providing feedback to the employee (C) has mixed results (O). Relative performance feedback increases the performance (O) when the employee is compensated based on individual performance (C) but decreases the performance (O) if the employee performs worse than their peers (C). Some employees have no performance-affecting reaction to feedback at all despite the content (O). The situational differences arise because some employees appreciate the feedback as a valuable resource (M) and poor performers compensate poor feedback by doing unrelated tasks or taking more risks (M).

"We find that providing relative performance feedback increases the performance of participants who are compensated based on an individual incentive scheme. . . . the specific content of the feedback has no impact on performance: participants increase the performance to the same extent when receiving coarse or fine feedback, and this

increase in performance is not affected by whether the feedback indicates that relative performance lags or excels." (Hannan, Krishnan, & Newman, 2008)

"Although performance increases for those participants whose feedback indicates their performance excels, this increase is not sufficient to overcome the deterioration in performance of the other participants, resulting in a net decrease overall. Interestingly, supplemental analysis suggests that the deteriorating performance is not due to reduced effort but rather to reduced effectiveness of the participants' task strategy as they devote cognitive resources to activities unrelated to the tasks and/or adopt more high-risk strategies." (Hannan, Krishnan, & Newman, 2008)

"My results suggest that individuals receiving an incentive-based contract are likely to perform better than individuals receiving a flat-wage contract if: (1) the form of the incentive contract motivates profit maximization, and (2) the feedback provided for belief-revision purposes helps individuals make better decisions." (Sprinkle, 2000)

"I find that feedback has a positive performance effect only for those who state a high preference for it. This is consistent with feedback-seeking behavior literature, which suggests that feedback-seekers, i.e., those who actively search for more feedback, place a higher value on feedback as a resource and are more committed to meet performance goals."(Lourenço, 2020)

Statement 10B

Recognition (C) because of an innate human desire for distinction (M), and, in the case of an employee who is more motivated by career progression than monetary rewards (C) implicit incentive to get promoted (M), leads to increase in performance (O).

"Finally, being in the recognition condition (i.e., being ebligle to win an acknowledgement award) leads to an increase in performance regardless of the initial stated preference. This result signals the innate human desire for distinction." (Lourenço, 2020)

"[I]ncentives provided by the company's bonus plan are stronger for managers who are positioned at higher hierarchical levels, who face weaker implicit incentives from getting promoted to the next level, and who face weaker implicit incentives from getting promoted to the top of the organization, after controlling for the position's scope and level of accountability." (Ederhof, 2011)